



FRIDAY, FEBRUARY 6.

## Condensed Profiles.

A correspondent has favored us with the inclosed sample of a kind of profile which is, unfortunately, often not made during the period of construction, and impossible to make later without fresh surveys. Such profiles are often of great value during the operation of the road, furnishing a guide for laying out stations, side-tracks, water-tanks, etc., and a convenient place of record for information of many kinds. In some respects a small scale profile of this kind is more useful for these purposes than a larger one, as it enables one to take in at one view the grades of a whole division, while still large enough to show clearly all the more important details.

The section engraved is about six miles in length, and as originally constructed was on about one-tenth the usual horizontal scale of working profiles, or 4,000 ft. to an inch, and about one-fifth the usual vertical scale, or 150 ft. per inch. These scales make the construction of such condensed profiles easy on ordinary profile paper. The system of marking structures hardly seems the best that might be used. The culverts, for instance, may well be shown by small circles or squares below the grade line and a U mark running up to the grade line be used for open culverts, while trestles and truss bridges, when of any length, can in general be indicated by a rude representation of their structure. The scale admits of showing the alignment quite clearly, also, if not too crooked. One of the most important and convenient things of all is to show the exact position of the head-blocks at the extreme

make delivery accordingly. The responsibility, however, for the delivery of the goods, on the part of the New York Central Co. would cease at Buffalo.

The complaints as to the diversion of freight, which have been presented to you, do not arise on shipments of this character made by the trunk lines as common carriers and under the conditions named, but they arise on shipments made under contracts with combinations of a number of railroads acting as forwarders, and in cases where the freight is to be carried over a number of railroads. These associated companies assume the responsibility of delivering the freight to point of destination beyond the terminus of the road which originally receives the freight. They issue through bills of lading to point of destination and make all proper arrangements for the transfer of the freight from one road to another, for settling the freight charges of each road, and adjusting all legitimate claims for loss or damage occurring on any part of the route; thus relieving the shippers from the great trouble, annoyance and expense dependent upon making separate arrangements with each road over which the freight passes.

The associations of railroads termed fast freight lines, are, of course, entirely voluntary associations. It is the privilege of each railroad company to form these associations with such roads as it may choose, and to decline to form them with other roads which it does not wish to take into a joint arrangement of this kind. I take it for granted that the state has no right to compel any railroad company to become a partner in the forwarding business with any other railroad companies; because responsibilities are to be assumed, one company for the other, and each company must be left free to judge for itself as to the selection of its partners. I also take it for granted that the state has no power to select for such freight line associations the routes over which they shall carry on the forwarding business. If any of these associations hold themselves out as forwarders of freight by such lines as they may choose, and the shipper does not choose to contract with such forwarder, he can select his route, and attend to the forwarding of the freight himself.

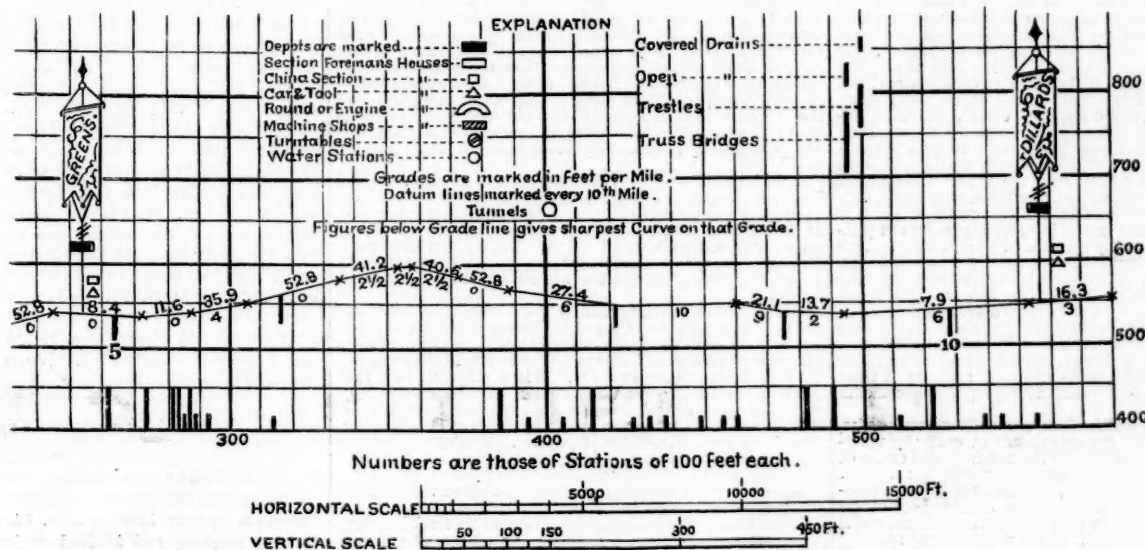
The bills of lading issued by these fast freight lines clearly state that, in consideration of giving a through bill of lading and of assuming the responsibility for the delivery of the shipment at point of destination, they reserve for themselves the right to choose the route over which shipments are to be sent; and it is under this clause of the contract that the diversions of freight have been made. The railroads further claim

these transfers, we do not expect, in so doing, to cause any inconvenience or injury to the shippers. In support of this declaration, I call your attention to the evidence given before the Commission, at the hearing of Jan. 14, by the chief complainant, who stated that his claims for damages sustained on diverted freight had, upon application, been promptly adjusted. This important fact, it seems to me, should have been candidly stated, as it throws an entirely different light upon the nature of the complaints, and shows that the railroad companies do not willfully and arbitrarily deal with the shippers, but recognize it as their duty to prevent injury, and must be as anxious to avoid delays and the consequent liability to pay damages resulting therefrom, as the shippers are to secure the prompt transportation of their freight.

Out of 1,115,000 tons shipped from New York over the six trunk lines during 1884, only 28,000 tons, or 2½ per cent., were actually transferred, and only a very limited number of cases have given rise to complaint. An average of some 4,000 shipments are made out of New York daily to different consignees, amounting to about 100,000 shipments per month; and only 40 instances of delay in diverted freight form the subject of complaint, 37 of which arise from transfers made to the new line. From this it does not appear that the evil is of such great magnitude as has been represented, though, of course, it is proper that we should use every means to prevent the occurrence of a single case.

It must also be borne in mind that delays occur, not only on transferred freight, but on all kinds of freight. No matter what may be the cause of delay of freight, it is now generally ascribed to the transfer, as is evidenced by the fact that several cases of delay complained of happened to goods not transferred; and complaints have been made to this office of delays attributed to the transfer of goods shipped in 1883, when not a single transfer was made during that year.

To present to you the exact facts of the case, I herewith submit a statement of the quantity of freight shipped since the railroad commenced to transfer freight, in July, 1877; the number of tons shipped from New York by the rail lines, the number of tons transferred, and the proportion which the transferred freight bears to the total shipments made in each year, from July 1, 1877, to Dec. 31, 1884. This statement may also be of interest as showing that since 1877 and 1878, there has been an increase of about 55 per cent. in the shipments made from New York, which may be considered as



CONDENSED PROFILE FOR RAILROADS IN OPERATION.

ends of station sidings, with the distance in feet between them.

Many roads, moreover, would have difficulty in finding a section as long as that shown, or at least much longer, without having occasion to use some symbol for a railroad crossing, which may be very neatly represented by a small outline sketch of the front view of a locomotive, the angle and direction of the crossing being given in figures. The word direction is put in italics, because awkward accidents in ordering crossings have been known to happen from omitting it, especially when the crossing was nearly at right angles.

With these various facts noted, and with the position of the mile-posts also accurately indicated, a record is obtained which costs but little and is easily kept up, and which is almost sure to prove of value and convenience in many ways. It will be most conveniently consulted and kept in better condition if made in a continuous profile-book, folded Z-wise, for any desired section can then be seen at a single view, if desired, as easily as with a rolled profile, while any single point is as readily consulted as in a profile book with separate leaves, without the awkward disconnectedness of the latter.

## Division of Freight at New York.

The following has been addressed to the New York Railroad Commissioners by Mr. Albert Fink:

NEW YORK, Jan. 29, 1885.

GENTLEMEN: Bearing upon the complaint of merchants of the city of New York and of the Traders' and Travelers' Union regarding the diversion of freight by the various New York trunk lines, I beg to submit a brief outline of the railroad side of the question.

The complainants claim that the railroad companies have no legal right to divert freight from the route over which the shipper directs it to be forwarded. There can be no difference of opinion as to the duty of railroad companies to accept all shipments offered, and to transport and deliver the same to a consignee on the line of their own road, or to such connecting road as the shipper may direct. For example, freight delivered to the New York Central Railroad for shipment to Buffalo cannot legally be diverted to any other line; and if the shipper directs that the New York Central Co. shall deliver the freight to any particular line to be carried from Buffalo west, the New York Central Co. would be legally bound to carry out the directions of the shipper and

that such contracts do in no way interfere with the right of the shipper to ship any freight by any road he may designate, if the reasonable conditions made by the fast freight lines, as to the selection of the route, do not meet his approval.

All the complaints presented concern freight that was contracted for by such fast freight line associations on these conditions.

This, I believe, is a correct definition of the rights of the railroads and the rights of the shippers. The difficulty is that the shippers do not clearly understand this, and they demand the advantages of the contract, without being willing to submit to the reasonable conditions under which these advantages are granted.

But it is not upon the legal grounds that the railroad companies desire to rely for their defense of the practice of diverting freight, nor do they desire, by withdrawing the facilities now offered the shippers, to force them to submit to that practice or to suffer any injury from it.

It is the most sincere desire of the railroad companies to continue to furnish all the facilities of through shipment, as heretofore, and to take all possible measures to prevent the practice of diverting freight from resulting in injury to any individual shipper or to the commerce of the city of New York.

In assuming the right to ship freight by such roads as the freight lines may select, they recognize their obligation to select only such roads as will afford like facilities; so that as far as the prompt forwarding of shipments is concerned, it would be a matter of indifference to the shipper what route was selected. They also desire to conform, as nearly as possible, to the directions given by the shipper as to the routing of the freight, and only depart from it in exceptional cases. The causes of these complaints have been of an accidental nature, and will hereafter be remedied, at least in a very great measure, if not altogether.

You will notice that the majority of the complaints refer to freight shipped during February, March and April, 1884. At that time the difficulty arose from the transfer of freight to a new line that had become one of the associated roads over which through bills of lading were issued, which was not then prepared, as has since been shown, to give the same facilities and dispatch to through shipments as the older lines. As soon as this fact was discovered, in May last, transfers to that line were suspended during the succeeding month, until October, 1884, when they were resumed to some extent; the expectation being that the difficulties formerly existing had been overcome. Judging from the complaints arising from diverted shipments made during the month of December last, we have been disappointed in that expectation, and we recognize the obligation to apply the proper remedy, and steps to that end have already been taken.

I make this statement to show that while convinced of our legal right, under the contract made with shippers, to make

evidence that the trade of New York cannot have suffered as much from the transfer of freight, as is feared by the complainants. The statement is as follows:

Periods.	Tons carried.	Tons transferred.	P. c. of total.
July 1 to Dec. 31, 1877....	394,250	33,908	9.1
Year 1878.....	715,808	23,460	3.1
Year 1879.....	803,770	22,149	2.7
Year 1880.....	986,013	20,347	2.1
Year 1881.....	1,198,597	6,253	0.5
Year 1882.....	1,361,708	No transfers	0.0
Year 1883.....	1,185,220	"	0.0
Year 1884.....	1,115,052	28,126	2.6

## WHY TRANSFERS ARE MADE.

The question will, of course, be asked: Why is it necessary to make any transfer at all? I admit that if it cannot be shown satisfactorily that there are good reasons for it, the practice should be abandoned altogether. The railroad companies themselves are even more adverse to this practice than the shippers can possibly be; and they have only resorted to it reluctantly and for the purpose of avoiding greater evils.

The object of the methods adopted by the railroad companies is to secure the maintenance of published tariffs, to prevent ruinous competition between themselves and its injurious consequences to public interests, namely, unjust discrimination between shippers and commercial communities, and uncertain and fluctuating freight charges.

The complaining merchants of New York have probably forgotten the state of affairs that existed in 1876 or 1877, when no fixed tariffs were maintained, each road contracting with shippers at such rates as it saw fit. Appeals were then made to the railroad companies to remedy this injurious state of affairs; and in July, 1877, the four trunk lines united in an agreement to adhere to their published tariffs and secure the same rates to all shippers for the same services; and in the carrying out of the said agreement it was necessary to resort, to some extent (shown in the above table), to the transfer of freight. Although it cannot be said that these measures have completely accomplished the purpose in view, yet they have done much to mitigate the evils that formerly existed.

The House of Representatives has recently passed the Reagan bill, the object of which is to accomplish the very purpose for which the trunk lines are associated together, namely, to enforce the adherence by the railroad companies to their published tariffs, to avoid the payment of rebates and the consequent unjust discrimination between shippers. But the measures proposed in the Reagan bill are entirely inefficient and impracticable. It is intended to prevent the payment of rebates by imposing fines upon the railroad companies for violations of the law, through a tedious process of litigation. The



members of the House of Representatives who voted for the Reagan bill evidently did not understand the nature and character of the subject with which they dealt, and could hardly be expected to be familiar with its practical bearings. They did not understand that concessions in railroad charges can be made to shippers which have the same effect as rebates, and yet cannot possibly come within the restrictions of any law that can be devised. The payment of rebates can be cloaked in so many different disguises that it is impossible to discover their real intent. The concessions may be made in the form of a donation long after the freight has been shipped; or free passes may be given, not directly traceable to shipments of freight; or the charges for freight may be made upon less than the actual weight, without possibility of discovery, unless government inspectors are appointed to weigh every shipment.

There are daily shipped out of the city of New York by the six trunk lines, to points beyond their western termini, not including local shipments to points east thereof, some 4,000 separate lots of goods, consisting of about 50,000 parcels. During 1884, out of the city of New York alone, about 1,200,000 shipments of through freight, aggregating 1,108,660 tons, were made—an average of about one ton for each shipment. The United States census for 1880 estimates the total quantity of freight handled by all the railroads in the United States during that year at 290,000,000 tons; and if they were composed of separate shipments in the same ratio as the tonnage carried from New York in 1884, some idea may be formed of the number of possible cases in which such a law as the Reagan bill may be evaded or violated. There are not people enough in the United States to watch and detect violations of such a law; nor are there lawyers, judges and jurymen enough to enforce the provisions of the Reagan bill, and prevent unjust discriminations of one sort or another.

From the very nature of the transactions it is useless, and so far it has proved useless, to attempt to control this matter in the way proposed by statute laws, and to rely upon the courts for their enforcement. All attempts of that sort must prove, from the very nature of the case, futile hereafter, as heretofore.

Yet the railroad companies, as a whole, are opposed to the rebate system and are desirous of making the same rates alike to all shippers for like services. They recognize that it is in their own interest as well as in the interest of the public that this should be done.

But, considering that the shipments out of New York alone pass over several hundred different railroads, and the strong temptation to some roads to secure an increase in their traffic by making secret reductions from the open and published tariffs, and the desire and great effort on the part of each shipper to secure special concessions in his own favor, and further considering the fact that any one of these many roads, without the control or knowledge of the others, can readily make such concessions, and oblige the others, in self-protection, to do the same, the difficulty of carrying out the agreements which the railroad companies enter into for the purpose of maintaining their published tariffs and to avoid the evils of which both the public and the railroad companies alike have a right to complain, will be better appreciated.

What means can be adopted by the railroad companies to protect themselves against each other and to protect the public? It cannot be secured by legislation, that is clear. But some restraint must be imposed, both upon the railroad companies and on shippers, to prevent them from entering into these secret arrangements. The public have a right to demand the strict adherence to well-constructed, just and reasonable tariffs. The question how this just claim can be complied with has engaged the attention of railroad companies for a long time, and they finally have resorted to methods which they believe can be made effective, and one of these methods necessitates the diversion of freight, complained of in this case.

The uncontrolled competition between railroad companies, each striving to secure the largest amount of traffic by whatever means it may be possible, is the fundamental cause of unjust discrimination and of constantly varying tariffs. This competition, or rather strife, between the railroad companies, is inconsistent with the intent and purpose of the common law, according to which the carriers should make like charges for like services. When a number of railroad companies can render like service, it is absolutely necessary that they should either voluntarily agree or should be made to agree upon the charges to be made by all alike for such like service. If each one of several hundred railroad companies were to make a different charge for the same service—and there is no law to prevent them from doing so—the common law principle cannot be carried out. Each carrier may, for itself, conform to the common law, but the separate action of many brings about the same result as if each company violated it.

From the multiplication of independent competing lines and their strife with each other, and not necessarily from the illegal action of any one company, results the unjust discrimination so much complained of, and also results the impossibility of its suppression, either under the common law or statute laws of states or Congress. No one railroad company can be held responsible for this unjust discrimination. Where, then, is the remedy? It must be sought by removing the cause of the evil. The railroad companies which can render like service to the shippers must agree upon like charges for such service, and these charges must be reasonable and just. The agreed joint tariff should be published, and maintained alike to all shippers situated alike. Next, measures should be taken to prevent deviations from the agreed tariff, and this, it will be admitted, can best be accomplished by removing the motive for making secret concessions by the payment of rebates or otherwise.

For that purpose railroad companies competing for the same traffic each agree to limit themselves to carry what may be considered a fair proportion of the total traffic. If any company should happen to exceed its proportion, it agrees to have its excess freight carried by some other road offering equal facilities, that has not received its full proportion; thus making it necessary to transfer a limited quantity of freight from one road to another. This removes, at once, by striking the root of the evil, the motive for deviating from the published tariffs, and thereby prevents unjust discrimination. The measures adopted by the railroad companies, of which the diversion of freight forms a part, are, therefore, for a lawful purpose and in the interest of the public; they are simple, practicable means of enforcing the common-law principle, which it is impossible to enforce by statute laws, for the reasons above stated.

In dealing with this complicated subject, it is certainly better and wiser to adopt such measures as will remove all motive for the violation of the law, than to rely upon the enforcement of penalties by the tedious and expensive process of litigation, after the law has been violated and the wrong has been committed. Especially is this true since, as I have explained, it is almost impossible to discover such violations. Instead of adopting measures that will make each railroad company, for selfish purposes, transgress the law, it is much better to adopt measures that will make it to the interest of every railroad company to obey the law. Upon these correct principles the methods adopted by the railroads are based, and they should be considered in that light.

Divisions are not only made for the purpose of limiting

each company to an agreed proportion of traffic, but also as a direct means for preventing the payment of rebates. When it is suspected that any one of the various companies over which freight from New York is forwarded (and there are several hundred) has made special contracts in violation of its agreement to maintain the published tariffs, the freight is diverted from the route thus suspected, and forwarded by some other route which charges the full tariff. From this fact will be explained the bitter feeling against the diversion of freight, on the part of some shippers who have secured special favors from a particular route, and who by the diversion of their shipments are obliged to pay the full tariff and are put on the same footing as other shippers. This may also explain the opposition of the Traders and Travelers' Union to these methods, that being an organization whose avowed purpose is to secure for its members lower rates of transportation than are given to the general public, as appears from the correspondence which was submitted to your Board at the hearing of Jan. 14.

It being conceded that the railroad companies recognize it as their duty, when it becomes necessary to transfer freight, to give the same facilities and dispatch to such transferred freight as if it were shipped as originally intended, it must be apparent that the practical methods adopted by the railroad companies for the suppression of rebates and unjust discrimination are much more simple, direct and effective than the methods provided in the Reagan bill. In the first place, all the railroad companies parties to an agreement to maintain rates, with their numerous agencies, become interested in discovering violations of the law, and even where such violations are only suspected (and in most cases it is impossible to obtain direct proof) effective measures are taken to prevent the same; whereas the Reagan bill only contemplates the enforcement of penalties, which can only be imposed after expensive and tedious litigation.

Your honorable Board, in its last report, has laid it down as a rule that the railroad companies should strictly adhere to the published tariffs. The action of the railroad companies, therefore, in adopting these measures is for the very purpose of enforcing that rule. This the Reagan bill seeks to do; but, for the reason stated, cannot.

It cannot be expected that restrictive measures that are adopted for the purpose of remedying so widespread an evil will be acceptable to those parties with whose self-interest they conflict. The execution of any law must bring with it some hardship to innocent parties. I submit whether the methods adopted by the railroad companies, even if they did cause some inconvenience—which, however, it is desired and intended to avoid—are not less objectionable than the expensive, time-consuming and tedious litigation by which the Reagan bill proposes to attain the same object. The disadvantages of these methods are infinitely smaller than the evils which they are intended to prevent. Therefore the measures adopted by the railroad companies to carry out the intent and purpose of the common law, to secure to individual shippers and commercial communities reasonable and non-discriminating tariffs, permanently maintained, should have the sanction of the law.

If the interference of the Legislature is to be invoked, it should be in the direction of supporting the action of the railroad companies and strengthening them in their effort to conform to the common law, and to protect them against the efforts made by such organizations as the Traders and Travelers' Union, whose avowed and illegal purpose it is to secure for its members special privileges that are not given to the general public.

Unfortunately the difficulties of the railroad problem are not fully understood by the public, by the courts, nor by our law-makers, and hence the improbability of their judging correctly of such practicable remedies as it is in the power of the railroad companies to apply. It is a singular fact that while the railroads are greatly abused for the existence of evils, for many of which they are not responsible, and which they deplore as much as the public does, their efforts at reform meet with the greatest opposition. While, on the one hand, they are expected to institute reforms, on the other hand they are to be legally prohibited, as is attempted in the Reagan bill, from adopting the only practical methods by which the evils complained of can be remedied.

I trust a more thorough investigation of this subject than it has yet received from legislatures or officers of the state will do much to remove existing prejudices, and put the efforts of the railroad companies to deal with these complicated questions in an effective and practical way in their proper light before the public. Respectfully submitted,

ALBERT FINK.

## Contributions.

### Mr. Jervis and the Croton Aqueduct.

NEWTON, Ia., Jan. 28, 1885.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Mr. Shinn, in his biography of the late John B. Jervis (published in the *Railroad Gazette* of Jan. 23), gives him all the credit for plans and construction of Croton Aqueduct.

Is this just to the late Major D. B. Douglass? Possibly some member of American Society of Civil Engineers can answer.

D. H. AINSWORTH.

### Elastic Washers.

NEW YORK, Jan. 28, 1885.

TO THE EDITOR OF THE RAILROAD GAZETTE.

The extensive use of elastic washers in rail joints by the railroads of this country, is shown by the tabulated statement which appeared in one of your late issues.

As opportunity has offered itself, I have, in the last few years, made diligent inquiry among those who practice this method of fastening joints, with the view of obtaining a scientific explanation of what benefits were found to flow therefrom. After asserting that the stored up force in the elastic washers, under compression, is a material aid in checking the nuts from turning back on the bolts (a statement to which all will agree), the advocates of this practice go on to say: "But the elastic washers are chiefly valuable at joints, because they take up the slack due to wear. You may positively lock your nuts on the bolts, but after a time you will find them loose, and rattling disagreeably under passing trains. By the expansion of the elastic washers, the joints are made firm, and the noise is stopped."

It seems to me that the above statement singularly fails to take account of the real cause of the looseness from wear. If the larger part of the wear, after the scale and rust have been rubbed off the bearings of the new material, could be attributed to concussion, or the contraction and expansion, the explanation would commend itself to sober reason; but the

evidences of wear on the rails and plates point unmistakably to joint deflection as the great cause.

This being recognized, the use of elastic washers to take up the wear, by withstanding the enormous lateral strain that comes to joints not properly supported at their bases by the joint ties, seems somewhat akin to the Partington plan of opposing the tidal power with a broom. SOLID JOINTS.

### Torpedo Signals.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Appropos of the matter of guarding against tail-enders, concerning which you have lately said several good things, I am exercised by reason of the rule: "One torpedo is a signal of danger—to stop! The danger signal (by torpedo explosion) should be two or three torpedo shots, coming in quick succession. One shot—get train under control immediately, and if second shot be not made within 100 yards, stop! Two shots at interval of 100 yards—proceed with great care, or with train under full control."

When an engineer runs over a torpedo he gets his train under control as soon as he can, anyway! If he comes to his second torpedo his mind is relieved. Don't keep him waiting. Give him his three torpedoes at the outset when you want him to stop. Two out of the three will explode anyway, and two close together serve the purpose of three. One that would not explode is the one that would be placed alone (by the present rule) possibly. Take no chances.

### Uneven Wear of Joints.

DETROIT, Mich., Jan. 20, 1885.

TO THE EDITOR OF THE RAILROAD GAZETTE:

There is one statement in the article on "The Heaviest Rail in America" in your issue of Jan. 16, that I cannot allow to go unchallenged, i. e., "When a rail has worn down a certain distance the surface becomes so rough that the rolling stock is damaged and it is therefore really more economical to renew the rail than to wear it out."

I am aware many rails have been taken out of track before they were worn out, because of rough surface. I have taken out many such myself, but have never seen a case of this kind that could not be traced to improper straightening of the rails at the mill. I have taken out many of these "lumpy" rails that had not been in track a year, and have had rails from the same mill that were properly straightened remain in track until the head was worn down over one-half inch, and the surface was good when rail was worn out. Most of our roads have had such pressing calls for steel rails for branches and sidings that they have taken the partly worn rails out of main track to meet the demand. The time is soon coming when trackmen will have to decide as to how far the rail-head can safely be worn down before the rail should be taken out of main track and thrown into the scrap pile. Owing to increased attention paid each year to proper straightening, "rough surface" will have very little to do with the decision. J. D. H.

### Railroad Surveys and Topography.

POTTSVILLE, Jan. 5, 1885.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I am pleased that so many engineers have acted on my suggestion in your issue of Nov. 14, 1884, to give their views on mapping and kindred subjects. I wish now to make a few comments and criticisms on the articles which have appeared.

Mr. J. T. Dodge's article (Dec. 5) seemed to object to the use of sheets, principally on the ground of the storage room required to hold them. I find that sheets of the size mentioned, 19x24 in., on a scale of 20 ft. per inch, for preliminary maps to be used in the field for locating from projected locations, can be arranged to hold one mile, and a pile of one hundred of these sheets is just 1 in. thick, sufficing for a survey of 80 to 100 miles. A healthy office should have a ceiling not less than 9 ft. high; hence, by taking a drawing case, say 8 ft. long by 2 ft. wide; using a length of 2 ft. per shelf or drawer, spacing it off in 6 in. spaces, we have 18 spaces in each vertical row of shelves. Each space will hold at least 500 miles of surveys, or 9,000 miles in the height to the ceiling. By cutting the whole case up in the same way, it would hold 36,000 miles of lines, but the rest of the case can be used for roll maps, profiles, etc., etc.

During the past season I have made over 600 miles of surveys, all plotted on the sheets mentioned. I keep each line of surveys in a separate portfolio, and all my sheets are still kept in but one drawer of an ordinary drawing-table. I make a portfolio of heavy brown or buff drawing paper, pasting the two sides with a lap of about two in., making the space inside about 2 in. wider than the sheets, so that they will slip in and out easily. The top has a little flap to cover the ends of the sheets. The back is marked something like this:

"EXPERIMENTAL LINES,  
POTTSVILLE TO NEW BOSTON,  
VIA ST. CLAIR.

Scale, 200 ft. = 1 in."

In answer to Mr. Hardaway (Dec. 5), I use 5 ft. contours with a scale of 100 ft. per inch, 10 ft. contours with a scale of 200 ft. per inch, and 20 ft. contours on a scale of 1,000 ft. per inch. Your correspondent "A." (Dec. 5) must, I think (and I am not alone in the opinion), either be the original man who made the Atlanta map which started this discussion, or related to him. Otherwise he would hardly volunteer to defend what plainly cannot be defended.

Mr. C. R. Wise (Dec. 12) sounded the keynote for locating railroads. I have no doubt he has been seen, as I have, many sad failures in locating, by the "practiced eye." As for "Olif,



however, who follows him, as he attempts to be so terribly hard on topographical engineers, I will answer him in every item.

1. "Ollif" says he never saw "a location made by contours in an office that was worth the cost of the map." In answer to this, I can tell "Ollif" that I have made profiles from a projected location in an office, and compared the profile from the actual location on the ground of the line as projected, and no one could tell the actual from the projected location. "Ollif" makes exception, "unless made by the same engineer who did the field work." I can say that for the past four years I have had charge of at least 1,500 miles of surveys, and during all that time I have made every paper location, which was afterwards run in the field by another engineer. During the year 1881 I had charge of four full corps of engineers in the field on a difficult line, some locating and others on preliminary. I projected all the locations and sent the maps out to each party when required, and my projected locations were strictly followed. The work was not done by guess or by the "if I don't strike it, pull her back and hit her another welt" method. I kept all these parties going, and had charge of 60 miles of construction at the same time. I doubt if "Ollif" could have been with four parties and kept his "practiced eye" on construction at the same time.

I have had about as difficult ground to locate over in the last year (Pottsville & Mahanoy Railroad) as I have ever encountered. The location is along the bluffs of Mill Creek on a grade of 158 ft. per mile. The valley is already occupied by a branch of the Philadelphia & Reading Railroad, having a continuous grade for about seven miles of about 170 ft. to the mile. The mountain sides are covered with conglomerate rocks, varying in height from 1 to 50 ft. Numerous deep gulleys enter the valley, and sharp projecting points necessitate sharp curves. At many places hanging on by the "skin of your teeth" is necessary. Now, how would a "natural locator" like "Ollif" make a location in such a place without a topographical map?

2. "Ollif" says: "I believe eight-tenths of the experienced engineers of this country will agree with me when I say no man ever became a competent locating engineer by making his locations from a map in his office." I can reverse this with a stronger estimate by saying that I believe that 99 per cent. of all good engineers will disagree with his views. A man cannot make a good location in a difficult country without a paper location. Now for facts to prove my assertion:

About a month ago I had the pleasure of a ride over the celebrated Catawissa Railroad with Mr. J. H. Olhausen, Superintendent of the Mahanoy Division of the Philadelphia & Reading Railroad. It pierces through the mountain ridge at Summit station, with a tunnel about 1,000 ft. long, then goes down the Catawissa Valley to Catawissa with a uniform grade of about 33 ft. per mile. Trestles over 100 ft. in height and 500 to 1,000 ft. long occur frequently, and curves of 14 to 16 degrees are common. I do not know who is to blame for it, but it is certainly the worst piece of location I ever saw. Mr. Olhausen frequently remarked: "I feel like choking engineers whenever I ride over this line." In many places reversions following reversions occur where a tangent with light work would have taken out half a dozen curves. Had the engineer made a tunnel of, say, half a mile at the summit, he could have gotten a cheap and easy line all the way down the valley, avoiding all the trestles and innumerable curves.

Again, in 1881, when I took charge of the relocation of the Pittsburgh, McKeesport & Youghiogheny Railroad, I examined the profiles and alignment of the line previously located by a former chief engineer. I found that between Connellsville and Pittsburgh, 58 miles, the line followed the Youghiogheny River with the fall of the stream, about 5 ft. per mile at high water; yet it actually had 23 ft. grades per mile against the stream, as well as with it, undulating continuously. I substituted a continuous descending grade of 0.1 per cent., or 5.23 ft. per mile to near the mouth of the river. The alignment was equally bad. I found compound curves of one or two miles in length with, say, a 1° curve for 500 ft., then a 1° 30' for 300 ft., then a 0° 45' curve for 500 ft., etc.; sometimes a dozen branches in one curve. I revised these curves with, perhaps, two or three branches. They had been run by the so-called "practiced eye."

In conclusion, I would be pleased to show all these "natural locators" how we locate over Broad Mountain entirely from contour maps. I extend a cordial welcome to all, and if I cannot convince them that we are saving money for our company by so doing, then I will surrender.

P. F. BRENDLINGER,

Chief Engineer, Pottsville & Mahanoy R. R.  
POTTSVILLE, Pa.

#### TECHNICAL.

##### Locomotive Building.

The Rogers Locomotive Works in Paterson, N. J., last week shipped a locomotive to the Richmond & Danville and one to the Cincinnati, New Orleans & Texas Pacific. They are building five small engines for the Manhattan Elevated road in New York.

The man who moves the Baldwin Locomotive Works every year is hard at work again this winter. This time he has bought a farm at Perkiomen Junction, on the Reading road, and is going to erect new buildings at once. In the meantime, the proprietors and managers of the works are quietly attending to their own business in Philadelphia, and say they have no intention of removing and no desire to do so.

The Manchester Locomotive Works, in Manchester, N. H., are building a number of locomotives for the Chicago, Burlington & Quincy road.

##### Car Notes.

The newly reorganized Jones Car Manufacturing Co., of Schenectady, N. Y., has made a large contract for cars for the

New York Central Sleeping Car Co., which will cover the present year, and has also secured a number of other smaller orders. The President, Mr. Walter A. Jones, is a young man who has made many friends by his plucky and honest course since the suspension of work a year ago.

The Buffalo Car Manufacturing Co. will shortly start up its works in Buffalo, N. Y., which have been closed for several weeks. The company has a large order for coal cars for the Delaware, Lackawanna & Western road, besides several smaller orders.

The Anniston Car Co., in Anniston, Ala., has just completed an express car of the Lucas pattern, especially designed for the transportation of fruit. This car will be sent to the New Orleans Exhibition before going into service.

##### Bridge Notes.

The Wrought Iron Bridge Co., in Canton, O., has taken contracts for six iron highway bridges in Gilmer County, W. Va., all to be completed by July next.

The Indianapolis Bridge Co. has taken the contract for an iron bridge over Pogue's Run on East street in Indianapolis, and has several other contracts on hand.

The works of the Dominion Bridge Co. at Lachine (Montreal) are busy on the steel cantilever bridge over the St. John River at St. John, N. B. They are also building a 90 ft. draw-span for the Canada Atlantic, a 150 ft. span for the Quebec & Lake St. John, two 210 ft. spans for a highway bridge at Drummondville and other smaller work. The shops of the company are large and are well supplied with the most approved tools and machinery.

##### Iron Notes.

Oliver Bros. & Phillips in Pittsburgh, at a recent meeting of their creditors, secured an agreement for an extension as proposed by them. They will pay all claims against them in full in five yearly installments, the first to be paid Feb. 1, 1886. All the property of the firm is to be covered by a mortgage to be executed to three trustees named by the creditors, who shall have the right to take possession in case of default of payment on any of the above installments. Claims of less than \$500 in amount may be paid in cash. They are to make reports of their business to the trustees every six months. The same terms apply to the Oliver & Roberts Wire Co., which is controlled by the firm.

During the year 1884 the rail mill of the Scranton Steel Co., in Scranton, Pa., running single turn only, made 57,031 gross tons of rails. The works ran only 283 turns, thus averaging 201 tons rails per turn. The amount of this product will be better appreciated when it is remembered that the steel for this large quantity of rails was made with two four-ton converters running single turn only.

The Cambridge Rolling Mills, in Cambridge, Mass., which were burned last summer, have been rebuilt, and are now in full operation.

The Bessemer Steel Works, in Troy, N. Y., will start up Feb. 2, the workmen having accepted a reduction in wages.

The Maiden Creek Iron Co. is running its rolling mill at Blandon, Pa., full time.

The new Bird Coleman Furnace, at Cornwall, Pa., is nearly completed, and will, it is expected, go into blast Feb. 15. This is a very large furnace, and is expected to make about 700 tons of iron a week.

The Helmbach Forge & Rolling Mill Co., in St. Louis, is running its puddling furnaces, scrap furnace, small rolling mill, link and pin machinery, the blacksmith shop and two axle hammers, and employing about 200 men.

The works of the Edgar Thomson Steel Co., at Braddock, Pa., are to be started up next week. The employees will accept a reduction in wages.

##### Manufacturing and Business Notes.

The Bodine Roofing Co., at Mansfield, O., whose factory was burned down in November, expects to be in condition to fill orders again within the next 30 days.

##### The Rail Market.

**Steel Rails.**—The market remains unchanged, and quotations may be put at about \$27.50@28 per ton at mill for ordinary orders, although, as before, some reduction will probably be made for a large order. No heavy contracts are reported on the market, however, most of them having already been placed for this year.

**Rail Fastenings.**—A little more inquiry is reported, but business continues extremely dull with very few sales. Spikes are still quoted, nominally, at 1.90@2 cents per pound in Pittsburgh; track-bolts, 2.25@2.50, and splice-bars at 1.60@1.70 per pound.

**Old Rails.**—Few sales of old iron rails are reported and the market is very quiet. Prices range from \$17@18 per ton at tidewater, and at \$18@19 delivered in Pittsburgh. Old steel rails are quoted at \$16 per ton in Pittsburgh for mixed lots.

##### Lake Superior Iron Ore.

The Marquette Mining Journal gives the following statement of the production of the mines and furnaces in the Lake Superior region for the year ending Dec. 31:

	1884.	1883.	Inc. or Dec. P. C.
Tons iron ore mined.....	2,455,924	2,352,288	1,103,636 4.4
Tons pig iron made.....	57,387	57,384	D. 97 0.2

The Mining Journal estimates the total value of the output in 1884 at \$13,921,491, and in 1883 at \$14,969,108, the decrease of \$1,047,617 being due to the lower prices of ore and pig iron last year. The output of ore includes all mined, both that shipped out of the region and that used by local furnaces. There were five furnaces in blast last year, and ore was taken out of 63 mines.

##### Prevention of Accidents.

A correspondent of the Richmond (Va.) State, after mentioning several cases of overworked railroad men which had come under his observation, says:

"I earnestly suggest and respectfully urge the managers of our Virginia and Southern systems to adopt a few simple rules. Some roads, we believe, use some of them:

1. Employ as train dispatchers only men competent, sober and conscientious.
2. Employ no boys under 13 in any capacity.
3. Allow no crew to make more than 16 hours per day.
4. Require every employé to rest at least 8 hours before going on a second run.
5. Allow no whiskey on your trains.

"I have seen conductor, engineer and brakeman all drinking together, while a fireman was running the train, most likely swearing because he was not invited to join this merry party in the caboose. I have the kindest feeling for the officials of our railway systems in Virginia; some of them are warm personal friends, and am writing in no spirit of dyspeptic fault finding, but simply with the hope of doing good to men who have few comforts and numberless hardships."

##### American Stock Cars in Australia.

The Engineer-in-Chief of the government railways of South Australia, has recommended to Parliament that the "Burton Patent American Cattle Wagon" is the best, the tests proving satisfactory, and that it be adopted by the Australian government. Two of these cars have been running in that country for the past six months. It is probable that the Burton Stock Car Co., of Boston, will fill a large order

for these cars to be shipped in the early spring. The official notice of the result of the investigations of the engineer, and the acceptance of the Burton car, is on file with the above company.

##### Long Run of Locomotives Without Repairs.

Locomotives Nos. 72 and 73 on the Cincinnati, St. Louis & Chicago road have now been in service 20 months without losing a trip from need of repairs, and have averaged during the time named to run 4,368 miles per month. There are four of this class of engines on the road, Nos. 72, 73, 74, 75. They are McQueen build, have 18 by 24-in. cylinders, 5 ft. 9-in. driving wheels. Total weight of each engine when empty is 85,000 pounds; weight on drivers, 56,000 pounds; on trucks, 29,000 pounds.

##### A Wooden Railroad.

Contractor Nelson Bennett, who has 30 miles of grading on the Cascade Division of the Northern Pacific road in Washington Territory, found it necessary to haul supplies to his grading camps through a country entirely without roads. He has solved the problem by building a railroad some 20 miles long. It is of 30 in. gauge, and the rails are heavy planks laid edgewise on stringers. The cars have double-flanged wheels and are drawn by mules. This road cost him about \$1,000 per mile, which he estimates is less than the cost of a good wagon road.

##### A Train Fire-Extinguisher.

Master Mechanic Patterson, of the Cincinnati, Indianapolis, St. Louis & Chicago, has just put in service on some of the express trains a patent fire-extinguisher. A tank holding two barrels of water is placed in the corner of each coach, to which tank is coupled a small piece of hose, which on the other end is attached to the air brake, and in such a manner that the force of the air brake can be used for pressing the water from a tank through a hose which can be run out to any part of the car. The force of the air brake is such that it will throw a  $\frac{1}{2}$ -in. stream 75 to 100 ft., and in case the water in the tank in the coach gives out it can be replenished by a simple arrangement connecting the locomotive tank with the car tank. Of course the device is intended to extinguish fire before it makes much headway. Often a few buckets of water, when a coach chances to take fire when the train is moving, would save serious damage.—*Indianapolis Journal.*

##### The Steel Rail Market in Europe.

Matheson & Grant's Engineering Trade Report says that the combination of European rail-makers has maintained prices last year at the rates established last spring, namely, from £5 per ton for heavy sections to £6 for light sections, these rates being for considerable contracts, and not including accessories. But while this combination enables some of the less modern works to make rails without loss, it reduces the weekly output of the newer factories, which, with free competition, would monopolize the trade. The output capacity of Great Britain is about 1,500,000 tons of steel rails per annum, a total which much exceeds the demand. In the United States the capacity is even greater, there is no export trade to assist it, and the present price of \$27 per ton is unremunerative to most of the factories. The basic process is little used in England, the low price of hematites giving the ordinary Bessemer process an advantage. In Germany the economical conditions are more favorable, and about 4,000 tons of steel per week are produced by the basic process. The trade in foreign steel-making ore (one of the most notable results of the Bessemer invention) has enormously developed during the last five years, the greatest supply coming from the well-known Bilbao Mines in Spain, where at present large stocks have accumulated.

##### Brooklyn Bridge Coal Consumption.

From a recently prepared statement it appears that the average coal consumption per day, for car service on the Brooklyn bridge is 6 tons, which does the work of moving the  $\frac{1}{2}$  in. cable, 11,450 ft. long and weighing 40,075 lbs., at a speed of 10 miles per hour for 20 hours per day, and keeps from 10 to 20 cars, weighing 10 tons each, constantly moving, the total number of car round trips per day being 1,200. The power required to move the cable and machinery alone, without cars, is 35 horse-power, which corresponds to a tensile strain of 1,312 lbs., or about 66 lbs. per ton weight of cable. Allowing the rolling friction of the cars to be 6 lbs. per ton and nothing to be lost by grade resistance (since the cars remain attached to the cable in descending and give up the power lost in ascending) the average power required to keep the cars in motion is 14.52 H. P. additional, or a total of 49.52 H. P., from which it results that the coal consumption per horse-power per hour is only 1.36 lbs., which is certainly very low, calculated to raise a suspicion that the rolling friction of the cars is not quite so high as assumed, especially as no allowance has been made for the heavy average load of passengers.

##### Sinking Large Iron Foundation Cylinders.

Messrs. Anderson & Barr, the contractors for sinking the pneumatic tubes at the Chestnut street bridge in Philadelphia, have closed a contract with the Government for sinking the foundation cylinder for the Fourteen-Foot Bank Light-house in Delaware Bay, by the pneumatic process. The cylinder is to be 35 ft. in diameter and 70 ft. high, resting on a wooden caisson at the base. The cylinder will stand 17 ft. above the water, which latter is 20 ft. deep, so that the penetration into the ground is to be 33 ft. The work is to be completed by Sept. 1, 1885.

##### Western Railway Club.

The regular monthly meeting was held on 21st inst., but only 11 members were present. Nine new members signed the Constitution and were admitted to the Club, which then adjourned, the only business transacted having been an inspection of the Laufman screw brake.

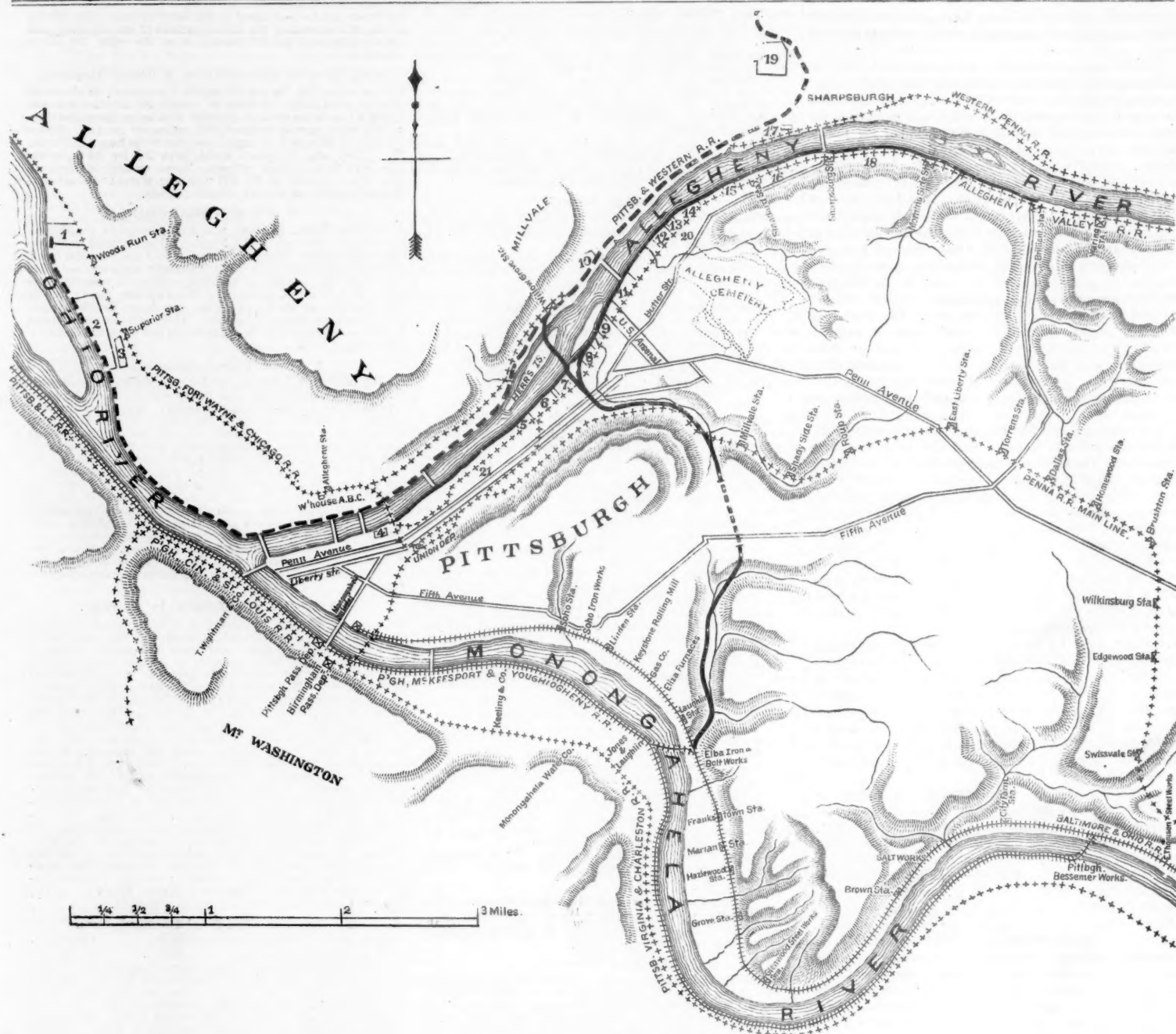
##### Telegraphing from Moving Trains.

On the New York, New Haven & Hartford Railroad last week, the first practical test of a railroad telegraph line by which constant communication can be kept up between a station and a moving train was made, the system being the invention of Lucius J. Phelps. The train upon which the test was made ran to New Rochelle, a distance of 15 miles. Telegraphic messages were sent and received from and by the moving train as perfectly as can be received and sent from station to station. The officers of the company, who were of the inspection party, expressed themselves entirely satisfied with the experiment.

##### Baltimore & Ohio Technological School.

The Baltimore & Ohio Railroad Company has taken a step toward the practical solution of the vexed apprenticeship question, the outcome of which will be watched with the greatest interest. The company has a business-like way of grappling with such subjects, and thus far its efforts—for instance, in establishing an insurance association for its employes—have been crowned with remarkable success. An order has been issued establishing a technological school at Mount Clare, Baltimore, "for the promotion of a higher course of instruction for the apprentices than that now pursued," with the view of affording the young men in its employ opportunities for obtaining a liberal technical education





PITTSBURGH JUNCTION RAILROAD.

far superior to those enjoyed by the employees of other railroads. All apprentices are embraced under the following general designations, and graded into three classes: the first or junior class of apprentices, the second class or cadets, and the third or senior class of cadet officers. The company bears the expense of the education of the apprentices and cadets, and in consideration thereof expects the privilege of availing itself of their services, at fair salaries, for at least three years after graduation. From the day of their admission to the school, the apprentices and cadets are to receive pay as follows: The apprentices, 70 cents per day in the first year, 80 cents in the second, 90 cents in the third, and \$1 per day in the fourth year; the cadets \$1 per day in the first year, \$1.12½ in the second, and \$1.25 per day in the third year; and cadet officers \$1.50 per day in the first year, \$1.75 in the second, and \$2 per day in the third year. In their appointment to the school, preference is to be given, other things being equal, to the sons of employers who have been killed or injured in the company's service, and free tuition is given to those only who are sons of employees having been in the service of the company for five consecutive years. They must pass a board of examiners as to proficiency in elementary studies and soundness of health, and are subject during the years of study to rigid discipline and frequent examinations. The exact scope of the school and the service for which its pupils are to be trained are not clearly defined; but it is evident from the long courses that the places to which they may aspire after their training are high indeed.—*Engineering and Mining Journal*.

#### Testing Locomotive Boilers.

The Massachusetts Railroad Commission is calling the attention of railroad companies to the state law providing for the testing of locomotive boilers, approved March 16, 1882, and to the regulations adopted and published by the Board under that law, April 15, 1882, especially to clause 5 of those regulations. These rules are as follows:

#### REGULATIONS.

1. All boilers for locomotives before going into service must be subjected to a hydraulic pressure of 150 pounds per square inch.
2. The water must be heated to near the boiling point.
3. This test must be repeated at least once a year.
4. The superintendent of motive power, master mechanic, or other proper agent of the company, will attend in person. He will remain outside, while an assistant will examine the fire-box from the inside.
5. A record of all tests will be made, giving dates and anything worthy of mention, and communicated to the Board.
6. Special examinations of the stay-bolts of locomotives in service should be made not less frequently than once in three months.
7. When these examinations are made, all the water must be drawn from the boiler, so that the vibration of the sheet

may indicate any unsoundness of the stay-bolt when it is struck with the hammer.

The Board urgently recommends, in addition to these regulations, that the four upper rows of stay-bolts shall be drilled from the outside ¼ in. in depth and ⅜ in. in diameter.

#### Western Society of Engineers.

The 201st meeting was held in Chicago, Jan. 20. Vice-President Randolph introduced President Williams, who delivered an inaugural address.

Mr. Wright, for Committee on Transportation, announced a paper for the next meeting, Ventilation of Stables.

It was voted that the Committee on Portraits have the portrait of President Williams added to the collection of Presidents' portraits.

Mr. G. R. Bramhall read a paper, What Civilization Owes to the Architect and Engineer.

It was voted that the address of the President and the paper by Mr. Bramhall be printed, and the Society then adjourned.

#### The Pittsburgh Junction Railroad.

The accompanying map of the cities of Pittsburgh and Allegheny and their immediate vicinity shows very clearly the course and importance of the recently completed Pittsburgh Junction Railroad. The main line of this undertaking starts from near Laughlin's Station, on the Baltimore & Ohio Railroad, and traversing the dividing ridge between the valleys of the Monongahela and the Allegheny, crosses under the main line of the Pennsylvania Railroad, and crossing Liberty street at grade, passes over Penn avenue and the Allegheny Valley Railroad, and thence to the Allegheny River, on an elevated railroad 1,800 ft. long. The latter river is here divided into two parts by Herr's Island, and part of the iron bridge across the river and island is situated on a sharp curve, necessitating a special method of construction, which, together with details of the iron work of the elevated road, we hope to illustrate hereafter. The two iron bridges are 1,254 ft. long.

This main portion of the line is 4½ miles in length, and is completed and at work. The second or river division of the line runs along the southern edge of the Allegheny River bank and connects with the main line, as shown in the accompanying map, where the course of the Pittsburgh Junction Railroad is shown by a full, heavy line. About one mile of this is built, and construction is still progressing.

The objects of the Junction Railroad are comprehensive, and are regarded as very important to the growing prosperity of Pittsburgh. As an outlet to the Baltimore & Ohio, which line the Junction will connect with the Pittsburgh & Western, a large traffic is expected to and from the lake region. It will also enable the lines built in 1881, two in number, to reach that city. It connects the Baltimore & Ohio with the Pennsylvania Railroad at Lawrenceville station, the Pittsburgh & Western and the West Penn at Herr's Island, and the Pittsburgh, Fort Wayne & Chicago at Manchester, a western suburb of Allegheny City, and gives the Baltimore & Ohio Railroad another Chicago line through Pittsburgh and the Mahoning Valley.

In addition to the through connection referred to, the road will be of local advantage. Hitherto manufacturers have been unable to move materials from mill to mill, or to receive raw materials from outside the city, without being subject to charges on several roads, or the still more expensive outlay of teaming. This drawback will be obviated by the new connection. In the case of a Monongahela River mill desiring to move freight to a mill on the Allegheny, it would have to be hauled 12 miles to Brinton, on the Baltimore & Ohio, and the same distance back on the Pennsylvania Railroad, and then shifted to the Allegheny Valley Railroad for delivery. By the Junction road the haulage would be four miles on one line, and at the expense of a single charge. The advantage to local freightage is obvious, and is expected to result in securing a large business for the short line.

The River Division will bring the numerous mills on the Allegheny River bank into close proximity with the other iron and steel plants of the city, thus securing to them the convenience of shipping in car-loads direct, instead of hauling by teams, as is now the case. This improvement in transportation will be appreciated by the shippers because of the reduced cost, and by the municipal authorities on account of the saving to pavements.

The annual tonnage of freight moved in the immediate neighborhood of Pittsburgh is very great. One firm alone moves 1,000 tons every working day, and the tonnage of another large firm exceeds the cotton crop tonnage of America. A single blast furnace requires average daily



## BIN PLAN OF ELEVATOR A.

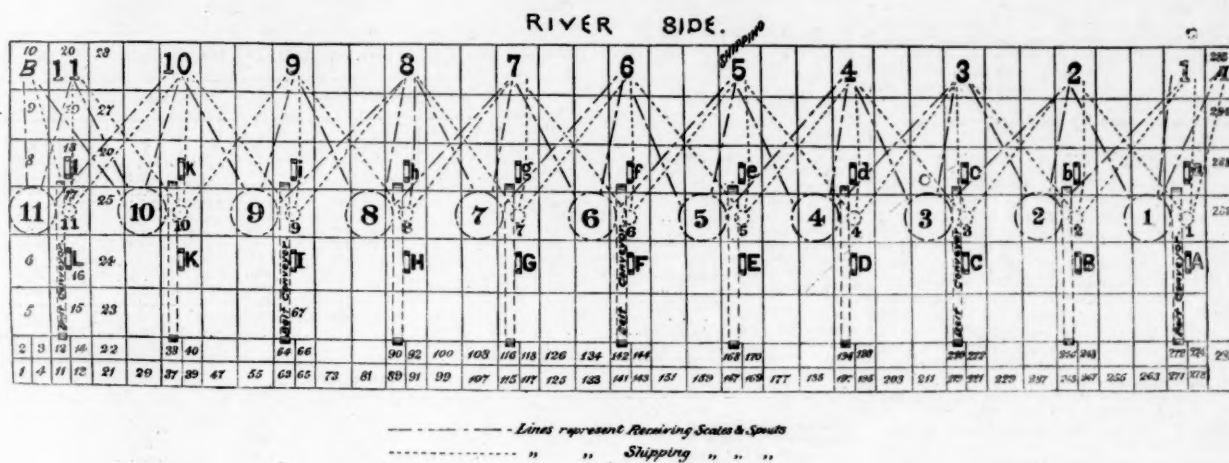


Fig. 7.

## ELEVATOR A AT SIXTIETH STREET STATION, NEW YORK CENTRAL RAILROAD.

Referred to in article on "Railroad Terminal Facilities in New York" last week.

transportation of from four to five hundred tons. It will be observed, therefore, without going into the details of Pittsburgh's industrial freight tag, that the aggregate tonnage of the manufacturers is immense, not only in freights hauled to and from a distance, but in that which is essentially local and is shifted over the various roads. The total tonnage of Pittsburgh is estimated to be about 12,000,000 tons per year.

The road is double-track throughout, and has been built to carry a heavy traffic without interfering with the street traffic by crossing at grade. The only street crossed at grade is Liberty street, and at this point the movement along that thoroughfare is very light, being chiefly diverted to Penn avenue, which is crossed at an elevation of 20 ft. The road passes under Fifth avenue (which runs along the crest of a high ridge and is lined with fine residences) by a tunnel which at the deepest point is 70 ft. beneath the surface. Though the rock is of a soft and friable nature, the tunnel was driven without disturbing the residences on the avenue above. Very heavy timbering was found absolutely necessary to prevent falls.

The tunnel is about 3,000 ft. in length, 24 ft. high to the crown, and 26 ft. wide in the clear. The excavation involved the removal of about 71,000 yards, principally of slate, fire-clay and shale. The lining consists of 15,000 yards of brick and 2,000 yards of stone masonry. There were used in addition to the materials mentioned, 10,000 yards of packing and 25,000 barrels of cement. The materials excavated were hauled from the work on a system of narrow-gauge tracks, the contractors having employed from the beginning four locomotives and some 40 dump cars. Such stone as was of the requisite quality was used in construction elsewhere on the road, and a large quantity of the material was ground up in the contractors' extensive brickyard, the brick for the tunnel having been mostly manufactured by the firm.

The project was first conceived by John W. Garrett, the late President of the Baltimore & Ohio Railroad, some 15 years ago, but fell through at that time. When, however, the Pittsburgh & Western Railroad became an accomplished fact, the promoters of this enterprise, Messrs. James Callery, President, J. W. Chalfant, Solon Humphreys, E. K. Hyndman, General Manager and First Vice-President, with W. M. Calf, R. M. Miller and other prominent manufacturers, and Robert Garrett, Samuel Spencer and Thomas King of the Baltimore & Ohio (under Mr. King as President the road was finished), took up the line, worked it up against all difficulties and brought it to a successful completion. To the foresight, sagacity, energy and financial standing of these gentlemen the promotion and completion of this enterprise is due.

Messrs. Shaw, Stearns & Norris were the contractors for the tunnel, grading, masonry and all other work, except iron and wood work and track-laying, while the bridges were built by Messrs. C. J. Shultz, of Pittsburgh, and the iron trestle-work for the elevated road by Messrs. D. W. C. Carroll & Co., of the same city. The undertaking as a whole was designed and superintended from its commencement and during construction by Mr. H. A. Schwanecke, Chief Engineer, who is also Chief Engineer of the Pittsburgh & Western Railroad; Mr. Theodore Cooper, of New York, acting as Consulting Engineer and designing the iron and bridge work in detail. O. H. Schwanecke was Engineer in charge of the work.

The whole line was built in one year and a half, and taking into consideration the difficulties and the extraordinary heavy work throughout its length, it is claimed to have been completed in shorter time than any other piece of railroad of its magnitude in the United States.

LIST OF IRON WORKS, ETC., NEAR THE PITTSBURGH JUNCTION RAILROAD.

The following numbers on maps, designate the location of the works of the firms and companies whose names follow the numbers:

1. Oliver Bros. & Phillips.
2. Manchester Iron & Steel Works.

3. Pittsburgh Locomotive Works.
4. Union Switch & Signal Co.
5. Wilson & Walker Co.
6. Black Diamond Steel Works.
7. Fort Pitt Iron & Steel Works.
8. Carnegie Bros. & Co.
9. Pittsburgh Bridge Works.
10. Graff, Bennett & Co.
11. Standard Oil Works.
12. Miller, Metcalf & Parkin.
13. Keystone Bridge Works.
14. Lucy Furnace.
15. Chemical Works.
16. Empire Oil Works.
17. Labella Furnace.
18. Standard Oil Works.
19. Spang, Chalfant & Co.
20. H. K. Porter & Co. Locomotive Works.
21. A. French Spring Works.

## Master Mechanics' Association.

The following are the committees and subjects for discussion at the next annual convention, which will be held at Washington, commencing June 16, 1885:

*Improvement in Boiler Construction.*—J. Johann, Wabash, St. Louis & Pacific; J. Davis Barnett, Midland, of Canada; Allen Cook, Chicago & Eastern Illinois.

*New Plans for Construction and Improvement in Locomotives.*—W. Woodcock, Central of New Jersey; G. W. Stevens, Lake Shore & Michigan Southern; A. W. Sullivan, Illinois Central.

*Improvement in Valve Gear.*—Chas. Blackwell, Norfolk & Western; J. F. Devine, Wilmington & Weldon; M. M. Pendleton, Seaboard & Roanoke.

*Best Metal for Locomotive Bearings.*—James M. Boon, New York, West Shore & Buffalo; J. S. Graham, Lake Shore & Michigan Southern; J. P. Hovey, Rochester & Pittsburgh.

*Steel Castings in Locomotives.*—R. W. Bushnell, Burlington, Cedar Rapids & Northern; John Black, Cincinnati, Hamilton & Dayton; T. J. Hattwell, Flint & Pere Marquette.

*Driving Wheel Brakes—To What Extent Is their Use Advisable?*—C. Berkley Powell, Old Colony; J. F. Crockett, Boston & Lowell.

*Is the Frequent Testing of Boilers by Hydraulic Pressure Advisable?*—H. N. Sprague (H. K. Porter & Co.), Pittsburgh; W. L. Hoffecker, Ohio & Mississippi; D. O. Shaver, Pennsylvania.

*Smoke-Stacks and Spark Arresters.*—W. F. Turrett, Cleveland, Columbus, Cincinnati & Indianapolis; J. B. Ross, New York, Lake Erie & Western; W. T. Smith, Kentucky Central.

*Shop Tools and Machinery.*—John Hewitt, Missouri Pacific; Howard Smith, St. Louis Bridge Co.; O. A. Laynes, St. Louis, Iron Mountain & Southern.

*Associate Members to Read Papers at the Eighteenth Annual Meeting.*—Willard A. Smith, Railway Review; F. B. Miles, Philadelphia.

*Committee of Arrangements for Eighteenth Annual Meeting.*—E. H. Williams, Baldwin Locomotive Works; S. A. Hodgman, Philadelphia, Wilmington & Baltimore; T. L. Chapman, Chesapeake & Ohio.

## Transportation in Congress.

In the Senate on Feb. 2:

The Pacific Railroad bill was taken up. On motion of Mr. Hoar, certain amendments of detail reported by him from the Judiciary Committee were made to the bill. The amendments, as explained by Mr. Hoar, specify by name the Sioux City & Pacific road as included in the bill and subject to its provisions, and make clear what otherwise might seem doubtful, that the interest of the whole debt must be paid each half year, and substitute 40 per cent. instead of 35 per cent. of the net earnings, as the sum to be paid to the government by such of the roads as may elect to operate under the provisions of the Thurman act. The bill went over until Wednesday (but was not then taken up).

The Inter-state Commerce bill was then taken up, and after speeches by Messrs. Harrison and Mahone a vote was taken on Mr. Beck's amendment to strike out from the House bill the provision relating to equal facilities and accommodations of passengers. The Senate by a vote of 22 to 33 declined to strike out the clause.

Mr. Hoar moved to amend Mr. Beck's amendment by making it read that the charge should not be greater for any "distance less than the whole length of the line in proportion than is charged for similar service over the whole length of the line."

Mr. Hoar's amendment was voted down—yeas, 5; nays, 41. Mr. Plumb then moved to amend Mr. Beck's amendment so

as to make it apply only to cases involving similar circumstances.

Pending consideration the Senate went into executive session.

In the Senate on the 4th:

Consideration of the Inter-state Commerce bill was resumed.

The question was on Mr. Plumb's motion to add the words "under similar circumstances" to the amendment offered by Mr. Beck, which amendment would prohibit a railroad company from charging more for transporting goods over a part of its line than for transporting the same goods over its whole line.

Mr. Plumb's motion was agreed to—yeas, 26; nays, 20.

The question then recurred on Mr. Beck's amendment as modified. On this Mr. Vance took the floor, and spoke at length. The amendment was lost.

Mr. Beck then moved to so amend the House bill as to permit the reduction of rates without previous posting of notice to that effect, but requiring the notice to be posted within five days. After debate this amendment was agreed to.

On motion of Mr. Ingalls, that portion of the House bill relating to separate accommodations for passengers was struck out. Then, upon motion of Mr. Cullom, the Senate bill was substituted for the House measure by a vote of yeas 35, nays 18. The following new section proposed by Mr. Sewell was agreed to:

"This act shall be construed as applicable to all railroad or transportation companies engaged in the carrying of freight from any place in the United States through any foreign territory to any other place in the United States, or from any place in the United States to any place outside of the United States; provided, that this shall not apply to transportation wholly by water."

The Senate then adjourned, with the understanding that the final vote on the bill should be taken next day.

In the Senate on the 4th:

The consideration of the Inter-state Commerce bill was resumed.

Mr. Call, on behalf of Mr. George, who was necessarily absent, offered an amendment, prepared by the latter-named Senator, providing that if a transportation company made a greater charge for a shorter than a longer haul, proof of that fact shall be deemed *prima facie* evidence of unjust discrimination. It was rejected; yeas 8, nays 32.

Mr. Vanwyck moved to modify the section that provides for the payment of the necessary expenses of the Commission so as to cover only necessary traveling expenses. Unanimously adopted.

At the close of the debate the Senate voted, 43 to 12, to substitute the Cullom bill for the House (Reagan) bill. This bill provides for a commission of nine members, whose powers are chiefly advisory.

The bill now goes back to the House, which is not likely to concur in the substitution of the Senate bill for its own measure.

## THE SCRAP HEAP.

## The Susquehanna Shops of the Erie.

Mr. F. M. Wilder, Superintendent of Motive Power of the New York, Lake Erie & Western road, says:

"It has been widely circulated that a large increase of the force is to be made in this company's shop at Susquehanna. On the strength of these reports many poor men who can ill afford the money are rushing in that direction to see if they can obtain work. Although we intend to do somewhat more in the future than we have been doing within the past few months, still there will be no larger increase of force, and men will only be employed who are now living in Susquehanna and are residents of that place, and it is entirely useless for mechanics to come to Susquehanna looking for work."

## Cool in an Accident.

"You had an accident the other day, I understand," said a merchant traveler to a conductor on a New York road.

"Yes, slightly; dumped our passengers over an embankment, that's all."

"Any of the boys aboard?"

"Of course. Did you ever see a train where there wasn't?"

"Any of them hurt?"

"No. They never get hurt. Thought we had caught one of them, though."

"How?"

"Well, you see he was traveling for a Boston drug house, and was pretty much of a dude. He had an end seat in the car that went over first, and after the excitement, when all the other boys had got out and were doing what they could to save the balance of the people, they discovered that the Boston man was missing. They skirmished around awhile in the debris, and in the second car found Mr. Boston crawling through a window. Boston caught on at once, and, looking up at the crowd, said, coolly and with a drawl:

"Aw, gentlemen, I weally beg pardon faw causing you



‡ Includes Illinois lines and Southern Division.



**RAILROAD EARNINGS, YEAR ENDING DECEMBER 31.**

NAME OF ROAD.	MILEAGE.					EARNINGS.					EARNINGS PER MILE.				
	1884.	1883.	Inc.	Dec.	P. c.	1884.	1883.	Inc.	Dec.	P. c.	1884.	1883.	Inc.	Dec.	P. c.
EASTERN ROADS.															
Bos. & Hous. T. & W.	87	879	...	...	...	\$ 447,051	\$ 433,115	...	\$ 103,936	...	\$ 5,139	\$ 3,944	...	\$ 1,295	70.3
Grand Trunk .....	2,018	2,790	124	...	4.4	16,947,997	19,036,942	...	2,151,945	11.2	5,808	6,836	...	1,028	15.3
Long Island .....	354	351	...	...	...	2,574,498	2,704,000	...	61,498	2.3	7,812	7,633	179	...	2.3
N. Y. & New Eng. ....	400	400	...	...	...	3,250,610	3,027,641	...	377,068	10.4	8,427	9,009	...	582	6.8
N. Y. Susq. & W.	147	147	...	...	...	1,034,410	1,003,634	30,540	...	3.0	7,035	6,838	207	...	3.0
Northern Central .....	322	322	...	...	...	5,511,777	6,088,133	...	566,254	9.3	17,149	18,307	...	1,158	6.7
Pennsylvania .....	2,128	2,461	67	...	3.2	48,565,717	51,083,005	...	2,516,344	4.2	22,223	24,786	...	2,563	7.5
Phila. & Read. Bldg.	1,580	1,227	231	...	17.7	30,072,156	30,349,201	67,955	...	2.2	18,541	22,834	...	4,293	23.3
Rochester & Pkts.	291	232	72	...	32.4	1,147,498	670,943	476,552	...	71.0	3,903	3,039	864	...	28.3
West Jers-y .....	190	187	3	...	1.6	1,319,618	1,227,654	91,964	...	7.5	6,046	6,565	519	...	7.9
Total 11 roads .....	8,400	7,301	499	...	6.8	11,973,262	11,148,350	1,436,481	5,611,569	...	13,330	14,700	...	1,370	9.3
Total inc. or dec. ....			499	...	6.8			1,436,481	5,611,569	3.6			...	1,370	9.3

**SOUTHERN ROADS.**

Ala. Gt. Southern...	290	290	...	...	1,155,136	1,071,829	83,307	...	7.8	3,983	3,696	287	...	7.7
Ches. & Ohio...	517	517	...	...	3,621,075	3,906,791	...	285,716	7.3	7,004	7,557	...	556	7.7
Eliz., Lex. & B. S.	130	130	...	...	780,499	713,103	47,396	...	6.7	5,849	5,485	365	...	5.7
Ches. O. & S. W.	390	390	...	...	1,376,997	1,327,455	54,542	...	6.1	3,451	3,314	137	...	6.1
Cin., N. O. & Tex. P.	333	336	...	...	2,567,879	2,596,195	...	...	3.476	61	7,717	7,757	...	1
Erie Tenn., Va. & Ga.	1,696	1,022	19	1.4	3,063,672	4,141,742	...	...	150,655	...	3,637	3,850	...	19
Eliz. & W. Va. Ry.	491	457	14	2.9	9,432	14,147	18,312	...	2.2	2,321	2,321	...	...	2.2
Ill. Cent. So. Dis.	589	574	11	1.9	4,318,218	4,364,730	...	...	46,712	1.9	7,331	7,552	...	20
Kentucky Central...	235	230	18	8.2	918,747	839,275	79,472	...	9.5	3,869	3,817	45	...	9.2
Louisville & Nash.	2,065	2,054	11	0.5	13,649,713	14,170,48	...	...	520,535	3.7	6,010	6,090	...	281
Mobile & Ohio	528	528	...	...	2,163,429	2,267,64	...	103,213	4.5	4,097	4,293	...	196	4.5
Nash., Chrt. & St. L.	591	554	7	1.2	2,358,682	2,328,894	29,788	...	1.3	4,204	4,204	...	...	1.3
Nat. J. & C. & Col.	195	190	...	...	81,800	177,711	4,680	...	3.9	1,819	1,772	47	...	3.9
Norfolk & W. Va.	105	96	90	103.1	55,925	1,712,311	356,096	...	201.2	3,011	3,011	...	...	201.2
Norfolk & West. Ry.	503	473	32	6.8	2,711,055	2,822,777	...	101,672	6.0	5,760	5,947	...	177	6.0
Rich. & Danville...	757	757	...	...	3,874,724	3,845,142	26,582	...	6.7	5,117	5,070	38	...	6.7
Char. Col. & Wug.	364	339	25	7.4	776,746	828,901	...	...	52,155	6.3	2,134	2,445	...	31
Col. & Greenville	296	290	...	...	688,961	737,897	...	...	48,996	6.6	2,327	2,493	...	168
Va. Midland	352	352	...	...	1,590,069	1,686,162	...	...	96,993	5.7	4,517	4,782	...	265
Western N. C.	220	201	19	9.5	440,122	822,637	58,085	...	15.3	3,901	1,901	100	...	15.3
South and Sub Valley	242	240	...	...	732,452	834,395	...	...	121,828	14	2,042	2,391	...	423
St. & Carolina	247	245	2	0.8	1,233,291	1,3	6,069	...	92,478	7.1	4,963	5,116	...	147
Vicks. & Meridian	142	142	...	...	504,600	527,450	...	22,730	4.3	3,493	3,958	...	160	4.3
Total, 23 roads...	10,669	10,415	254	...	51,158,189	52,045,399	700,146	1,047,356	...	4,795	4,907	...	202	...
Tot. inc. or dec.	...	...	...	2.4	...	...	...	887,210	1.7	...	...	...	202	1.7

**CENTRAL GROUP.**

Chi. & Eastern Ill.	232	252	...	...	1,552,216	1,653,567	104.35	62	6,180	6,574	...	414	6
C. & West Mich.	410	403	7	1.7	1,461,838	1,530,068	85,239	5.8	3,573	3,816	...	273	7
Chi., St. L. & Chi.	342	342	...	...	2,437,878	2,482,874	50,010	2.1	7,112	7,296	...	147	2
Ind. Wash. & Balt.	284	284	...	...	1,780,701	1,970,258	148,554	7.7	6,370	6,793	...	523	8
Cleveland & Akron	144	144	...	...	477,837	523,963	46,076	8.4	3,316	3,618	...	320	8
Canton Valley	161	161	...	...	312,669	311,230	18,561	5.6	1,942	2,057	...	115	5
Det. Lan. & No.	258	243	15	6.0	1,314,080	1,585,246	267, 66	17.0	5,049	6,524	...	1,415	21
Ext. & Terre Haute	146	146	...	...	759,811	732,150	18,661	2.6	5,143	5,015	128	2	2
Flint & Pere Marq.	362	357	12	3.4	2,249,706	2,571,978	303,202	11.9	6,214	7,394	...	1,080	14
Ind. Gen. & Ind. Inves.	856	853	...	...	6,187,768	6,674,703	489,917	7.3	47,673	6,988	...	509	7
Ind., Bloom.	896	892	...	...	2,640,000	2,975,511	326,503	9.1	5,606	6,361	...	565	8
Ind. & Mich. S. P.	1,361	1,340	...	...	14,002,000	18,113,416	3,611,436	19.5	11,121	13,816	...	2,685	19
Mexico & Central	1,478	1,464	...	...	11,721,000	14,000,767	2,288,767	18.3	7,984	9,548	...	1,576	16
O. & Mississipp	615	615	...	...	4,013,334	4,524,780	491,003	10.8	6,558	7,357	...	799	10
Ohio Sou. hern.	131	131	...	...	472,202	361,000	108,172	22.7	2,331	2,801	...	71	9
Peoria, Dec. & Ev.	254	254	...	...	761,157	720,882	40,275	5.6	2,997	2,838	150	5	5
Pittsburg & T. E. S.	71	71	...	...	1,193,521	1,402,704	209,243	14.9	16,834	19,785	...	2,051	14
St. L. At. & T. H.	...	...	...	...	1,283,702	1,484,077	200,368	13.6	6,583	7,671	...	1,608	13
N. in Line	181	185	...	...	1,404,206	832,487	571,719	11.1	5,304	6,031	...	768	11
Eschville Line	61	61	...	...	239,415	211,124	38,291	16.0	3,923	3,297	628	10	10
Tol. Av. A. & N. M.	...	...	...	...	16,696,331	16,908,463	212,082	1.2	4,746	4,806	...	60	1
Wab., St. L. & Pac	3,518	3,518	...	...	...	...	...	...	...	...	...	...	...
Total, 21 roads.	11,801	11,767	...	...	73,211,333	81,908,021	505,339	8,902,027	6,204	6,661	...	777	7
Total inc. or dec.	...	31	...	0.3	...	8,696,988	...	10.6	...	...	...	737	10

### NORTHWESTERN ROADS.

Bur. Fed. Res. & No.	739	714	25	3.5	2,706,450	2,846,772	56,313	1.7	3,784	3,987	203	5
Central Iowa	474	385	40	12.0	1,492,713	1,510,000	115,000	8.1	3,278	3,395	117	3
Chi. & Alton	869	869	...	...	8,702,491	8,810,610	103,119	1.32	10,363	10,363	...	...
Chi. & St. P.	4,748	4,363	213	4.7	21,473,010	23,659,818	1,686,818	0.8	4,913	5,183	270	5
Chi. & N. W.	3,850	3,644	193	5.4	23,363,700	25,024,003	1,658,363	6.6	6,085	6,867	782	11
Chi. St. P., M. & O	1,292	1,194	91	7.8	5,768,328	5,515,855	252,243	4.6	4,465	4,604	139	3
Des Moines & Ft. D	178	138	...	...	354,029	341,934	12,095	3.5	2,562	2,477	88	3
Green Bay, W. & St. P.	220	220	...	...	324,125	410,622	86,497	21.1	1,473	1,856	393	21
Ill. Cent. & Iowa lines	402	402	...	...	1,734,416	2,051,510	321,092	15.8	4,239	5,038	799	15
Marquette, H. & O	124	100	24	21.0	827,568	900,250	79,691	8.8	6,617	9,002	2,386	20
Mil. L. & W.	383	324	61	15.1	1,104,069	1,058,064	45,425	4.3	2,868	3,267	399	11
Mil. & Northern	227	185	42	22.7	510,034	478,003	31,971	6.7	2,247	2,584	337	13
Wisconsin Central	440	440	...	...	1,434,120	1,446,750	12,604	0.8	3,259	3,288	29	0
Total, 13 roads...	13,869	13,163	704	...	71,784,900	73,825,033	458,394	...	5,170	5,605	422	...
Total, inc. or dec.	...	...	704	5.4	...	...	2,408,133	2.8	...	...	432	7

## ROADS NORTHWEST OF ST. PAUL.

Canadian Pacific...	2,431	1,640	791	...	49.0	5,914,010	5,283,021	630,989	...	11.9	2,431	3,221	...	788 2
Northern Pacific...	2,462	1,916	546	...	24.7	12,531,620	10,149,055	2,443,565	...	24.1	5,116	5,757	...	181 3
St. P. & Duluth...	927	0	0	...	0.0	3,328,781	3,328,578	0	...	0.0	8,604	8,604	...	276 4
St. P., Minn. & Man.	1,392	1,304	88	...	6.8	8,275,387	8,304,600	...	119,213	1.4	5,979	4,437	...	458 7
Total, 4 roads...	6,512	5,678	1,444	...	...	26,104,748	25,155,204	3,076,554	127,010	...	4,316	4,954	...	618
Total inc. or dec.	...	...	1,434	...	28.0	...	...	2,940,544	...	11.7	...	...	...	835 12

**SOUTHWESTERN ROADS.**

Ft. Worth & Den.	110	110	...	...	450,252	386,898	72,354	18.7	4.175	3.517	658	...	782
Gulf C. I. & S. F.	536	520	16	...	1,761,835	2,124,440	...	359,605	17.0	3,293	4,085	...	1,912
o. & Tex. Cent.	522	522	...	...	2,570,375	3,251,875	...	6,1500	20.9	4,924	6,230	...	796
K. C. Ft.S. & Gulf.	389	389	...	...	2,411,015	2,007,87	405,149	...	20.2	6,203	5,141	1,062	...
Missouri Pacific	490	490	...	...	8,752,399	9,153,731	...	401,432	4.4	8,841	9,246	...	405
St. Louis & Iron M. S.	905	905	...	...	7,521,819	7,904,633	...	382,864	4.8	8,311	8,736	...	425
St. L. Ft. S. & W.	169	142	27	19.2	1,822,109	1,974,612	192,503	...	68	2,019	734	...	41
St. L. & San Fran.	764	737	27	...	4,644,373	3,904,723	739,650	...	18.0	8,079	5,298	78	...
Vicks., Sh. & Pac.	141	75	66	88.0	291,633	139,760	151,966	108.7	2,009	1,863	206	...	11
Total, 9 roads	4,526	4,390	136	...	28,890,738	29,160,681	1,564,458	1,825,411	6.385	6,043	...	258	...
Total inc. or dec.	...	...	136	3.1	...	...	260,943	0.9	...	...	...	258	...

**FAR WESTERN AND PACIFIC ROADS.**

Atch., Top. & S. F.	2,336	2,219	117	5.2	16,330,540	15,900,440	430,100	2.7	6,994	7,139	175	2.5
Central Pacific	2,953	3,007	54	1.8	22,088,134	24,744,420	2,656,286	19.7	7,487	8,229	742	9.9
Denver & R. G.	1,564	1,491	10	0.7	5,918,009	6,821,078	903,069	13.3	4,943	4,771	172	3.5
Utah Central	280	280			1,038,938	1,174,736	135,798	11.0	3,710	4,103	483	11.9
Total, 4 roads.	7,070	6,997	127	5.4	45,401,621	48,550,574	430,100	3,676,953	6,422	6,952	530	7.7
Total inc. or dec.			73	1.0				3,245,933	6.7		530	7.7
GRAND TOTAL:												
Total, 84 roads.	62,847	59,713	3,188	5.4	410,530,791	426,893,262	7,911,412	24,877,883	6,532	7,140	617	9.3
Total inc. or dec.			3,194	5.2				16,326,471	3.7		617	9.3

carried in large volume and at low rates. The decrease in gross earnings occurred in the six months from June to November, inclusive; in each of the remaining six months the gross earnings were about equal to or in excess of those of the previous year.

"December, 1884, shows a considerable increase of earnings over December, 1883, and indications are that the earnings of January, 1885, will similarly exceed those of January, 1884."

**Missouri Pacific.**

This company has published the following brief statement for the year ending Dec. 31 last, covering the operations of the Missouri Pacific proper (990 miles) and the St. Louis, Iron Mountain & Southern (905 miles), this system of 1,895 miles constituting the system owned directly by the company.

The comparisons made below are with the full report for 1883.

The earnings for the year, as compared with those reported for last year, were:

Earnings:	1984.	1983.	Inc. or D. c.	P. c.
Co. Pacific.....	\$8,752,260	\$9,153,731	D. \$401,439	4.4
Iron Mt.....	7,521,819	7,904,083	D. 382,864	4.8
Total.....	\$16,274,118	\$17,057,814	D. 784,296	4.8

<b>Expenses:</b>				
No. Pacific	4 492 508	4 928 463	D	483 867 0 8

Mo. facies.....	4,392,516	4,378,465	D. 483,807	9.8
Iron Mt.....	4,984,503	4,214,564	D. 225,161	5.3

Total.....	\$8,482,101	\$9,103,009	D.	\$710,928	7.7
<i>Net earnings:</i>					
Mo. Pacific.....	4,259,701	4,725,266	I.	\$46,535	2.3
Iron Mt.....	3,543,316	3,606,119	D.	157,803	4.0
Total.....	\$7,792,017	\$7,805,385	D.	\$713,088	0.9
Gross earn. per mile.....	8.88	9.02	D.	414	4.0
Net.....	4,112	4,151	D.	39	0.9
Percent of exps.....	52.1	53.0	D.	1.8	

The Missouri Pacific earnings were \$8,841 gross and \$4,303 net per mile; the Iron Mountain's were \$8,311 gross and \$3,902 net per mile, those of the whole system being shown

of the year is given as follows:

Interest and dividends received	\$4,765,791
Total	\$8,191,809
Mo. Pacific	\$1,760,320
rentals, etc.	263,550
From Mountain Interst.	2,194,390
rentals, etc.	201,380
	4,431,460
Surplus for the year	\$3,760,319

The surplus is equivalent to 12½ per cent. on the stock of the company. The dividends actually paid have been 7 per cent. The statement says nothing of the operations of the leased and controlled lines.

lensed and controlled lines.

**New Haven & Northampton.**  
This company owns a line from New Haven, Conn., to Conway Junction, Mass., 94½ miles, and its trains use the Troy & Greenfield track from Conway Junction to North Adams, 28½ miles. It owns branches from Farmington, Conn., to New Hartford, 14 miles; from Northampton, Mass., to Williamsburg, 7½ miles, and from South Deerfield, Mass., to Turner's Falls, 10 miles. It leases the Holyoke & Westfield road, from Westfield, Mass., to Holyoke, 14½ miles; making a total of 126 miles owned and 169 miles worked. The report is for the year ending Sept. 30.

A controlling interest in the stock is now owned by the New York, New Haven & Hartford Co. but the road is

New York, New Haven & Hartford Co., but the road is worked under its separate organization.

The general account, condensed, is as follows :	
Stock.....	\$2,460.00
Bonds.....	3,200.00
Bill's payable.....	669.00
Accounts and balances.....	170.48
Income account.....	382.57
<b>Total.....</b>	<b>\$6,882.05</b>
Road and equipment.....	\$6,557.66
Real estate.....	19.33
Stocks and bonds.....	80.00
Sinking fund.....	67,500
Material on hand.....	8,449
Cash and cash assets.....	64,790

The funded debt consists of \$1,300,000 first-mortgage 7 per cent. bonds, \$1,200,000 consolidated 6 per cent. bonds, and \$700,000 Northern Extension 5 per cent. bonds, the

yearly interest charge being \$198,000.

	1887-'84.	1882-'83.	Inc. or Dec.	P. c.
Train miles .....	677,180	674,984	L. 2,022	0.3
Passengers carried .....	494,786	503,431	D. 8,645	1.7
Freight-miles .....	8,773,290	9,052,389	D. 279,293	3.2
Ton freight carried .....	491,577	475,934	D. 15,583	3.2
Ton-miles .....	27,203,988	25,348,504	L. 1,907,474	7.0
<i>Average rate:</i>				
Per passenger mile .....	2.44 cts.	2.36 cts.	I. 0.08 ct.	3.3
Per ton-mile .....	2.10 cts.	2.25 cts.	D. 0.23 ct.	10.9

There was a considerable increase in freight traffic but a reduction in rates, probably due to an increase in through business.

7 The earnings for the year were as follows:

	1887-84.	1882-83.	Inc. or Dec.	P c
Freight trains.....	\$573,842	\$598,777	D. \$24,935	4.3

P	Passenger trains.....	\$29,431	\$28,144	I.	1,286	0	0
W	Wagonage, rents, etc.....	2,558	2,123	D	5-5	2	0
	Total.....	\$35,814	\$800.48	D	\$34.74	2	0
E	Expenses.....	\$41,611	\$40,788	D	\$23,173	4	0
T	Total earnings.....	\$394,201	\$205,263	D.	\$1,050	0	0
G	Gross earn. per mile.....	4.946	5.089	D.	143	2	0
N	Net.....	1.741	1.747	D.	16	0	0
	Per cent. of gross.....	64.8	64.8				

The decrease in gross earnings was almost made up by the

Net earnings, as above ..... \$291,266





Published Every Friday.

## EDITORIAL ANNOUNCEMENTS.

**Passes.**—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

**Contributions.**—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

**Advertisements.**—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

## THE COST OF TRANSPORTATION AND THE PRICES OF FARM PRODUCTS.

Farmers perhaps feel that the cheapening of transportation has been of but little advantage to them, because the price they receive for their grain is as little as when freights were higher. But the comparisons which the farmers make are apt to be of prices in one place with those in another. Previous to 1850, for instance, the Illinois farmer compared the prices he received there with those which he used to receive in New York or Pennsylvania. In 1870 the Iowa farmer compared the prices with Ohio or Illinois prices ten years earlier. Now the comparison is made by the Kansas, Nebraska or Dakota farmer, who complains that the prices of his produce are even lower than the low prices received a few years ago further east. The major part of the reduction of cost of transportation, as of other elements of production, is always likely to be gained by the consumer, except where the means of production are closely limited. If there had been no new land to be brought under cultivation, then, doubtless, there would have been no reduction in the price of wheat, and the farmers this side of the Mississippi would have got the whole benefit of the reduction in transportation charges; but the reduction would have been less than has actually occurred, and the price of land in this limited district would have so risen that a very large part of those who now own farms could not have had any, but would have been either tenant farmers or farm laborers. Generally, the reduction in the price of transportation tends to reduce the cost of everything, but of those things most which are of greatest weight compared with value, or have to be carried far. In the case of grain and new land, the almost inevitable effect of the extension of railroads into distant territories is to cause grain to be grown wherever there is any margin of profit between what the consumer pays and the cost of production plus the cost of transportation to the consumer. And after a few years of relatively high prices there is sure to be much grain grown so far from market or on such unproductive soil that when prices are lower than the average, the producer will not make any profit. This will be so just as long as there is any unoccupied land on which grain can be grown, whatever the transportation rates may be.

To illustrate the fact that the consumer gets the larger part of the reduction in the cost of transportation, we may cite the prices at Chicago, New York and Liverpool in different years. At the close of the year 1873, the price of corn was 52 cents a bushel in Chicago, 77 cents in New York, and \$1.06 in Liverpool. Last Saturday the quotations were 36½ cents in Chicago, 49½ in New York, and 66 cents in Liverpool,

the difference, of course, including cost of transfers and merchants' profits, as well as transportation. Thus the Liverpool consumer in 1873 paid 54 cents a bushel for getting the corn to him; now he pays but 30 cents. In 1873 the New York purchaser paid 25 cents a bushel for getting it from Chicago, and now he pays but 18½ cents. The reduction in transportation pure and simple has been at a greater rate than this shows, however, because there has not been much reduction in other charges. From Chicago to New York the freight rate has gone down from 33.6 to 14 cents a bushel (and much of this winter 12.6 and even 11.2 cents), and from New York to Liverpool from 16 to 9 cents. The New York-Liverpool rate, however, was as low in 1866 and 1867 and 1870 as it is now, at this season of the year.

Thus the cheapening of transportation has had a great effect on the prices to the consumer. If the reduction in charges had gone to the farmer instead, he would now be getting in Chicago 63 cents a bushel for corn and 97 cents for wheat in Chicago, instead of 36½ and 79.

The reduction in ocean rates has probably been on the whole a cause of loss to our wheat-growers, except those on the Pacific coast, who are more benefited by it than any one else—who, indeed, could hardly raise wheat for export at all at the rates formerly prevalent. But for growers whose crops are exported by Atlantic ports the reduction has been unfavorable because it has brought into competition with them a vast territory from which the ocean voyage is longer than from this country, especially our own Pacific coast, India and Australia. Just so any reduction in transportation charges, if equally applied, profits most the most distant producer. A reduction of 20 per cent. in the rate from some Dakota station to New York might amount to 10 cents per 100 lbs.; from Buffalo it would only be 2½ cents; and so the Dakota producer would make four times as much as the farmer near Buffalo, by the reduction. Taking farm products altogether, the reduction in ocean rates as well as that in rail rates has been of great advantage, doubtless. There is no such competition in the production of the others as there is in wheat production; and the cheapening of transportation has enabled us to produce corn and hogs and cattle for export from a vast territory which otherwise could at best be used only for grazing.

But, it may be said, however great the reduction in the cost of transportation may have been, American producers can have got little good out of it. The prices of their produce east and west are very low, and the value of farms in the east has been materially reduced, directly in consequence of the low railroad rates.

In answer to this we point to the fact that the country which in 1870 was affording a livelihood to 38½ millions of people now supports 57½ millions. Doubtless some at least of the farmers among the 38½ millions in 1870 would be better off to-day if there had been no fall in the prices for transportation, as they would be better off if there were not another acre of unimproved land which could be brought under cultivation to compete with them. But what of the other 19 millions? That they live, and, on the whole, prosper, is very largely due to the lower cost of transportation. If in New York, Ohio, or even in Illinois, the farmer's profits are less now than then (and on the average they are probably greater, at least in Ohio and Illinois, as is shown by the rise in the price of land), in almost all the country west of the Missouri and in much of that east of it the existence of a large population engaged in cultivating the soil has been rendered possible only by the cheapening of transportation. This has annexed to the world a vast territory fit for the occupation of men that otherwise must have remained a wilderness.

## THE ARGUMENT FOR BROKEN JOINTS.

## II.

## SPRINGS, JOINTS AND FALLING BODIES.

The action of car springs, and especially of elliptic passenger springs, is, in two senses, exceedingly sluggish:

(1) They will not, like a theoretically perfect spring, oscillate almost indefinitely when once started, nor do they readily admit of any oscillation whatever, properly so called, without constant repetition of the impulse. Elliptic springs can hardly be made by any moderate violence to do much more than return to their normal position without further oscillation. Spiral springs are more active, but they also tend to come speedily to rest after a single impulse.

(2) The velocity of motion in recovering from impact, measured by rate of motion and not by the absolute interval of time, is also exceedingly slow and governed by fixed law. In fig. 2 we have a spring in

equilibrium, acted on by two forces equal to each other, gravity pulling it downward, and the reaction of the spring pushing it upward. In fig. 3, a violent—perhaps very quick and violent—impulse has com-

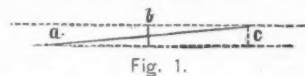


Fig. 1.

pressed the spring by twice the amount that the weight above compressed it in fig. 2. This is about the maximum impulse which ordinary car springs are capable of absorbing.

Now, the spring may be pushed down at any speed, because the force doing it is extraneous, but it will rise up at only one speed, that due to its own natural impulse from the resultant (or net effect) of the same two forces as in fig. 2, viz., gravity and its own reaction, the latter being now equal to twice the force of gravity. The difference between these two forces or  $F$ , fig. 3, is that which causes the body to rise upward, and it is at the first instant of return motion equal to the weight of the body, but it diminishes to zero as the body reaches its original position on the line  $OO$ .

In fig. 4 an impulse only half as great has been given to the body, and it sinks (approximately) only half as far, but on the other hand it is pushed upward by a force  $F'$ , only half as great. Consequently it will seem reasonable that it should take the same time for recovery, and so it does. In theory the time is precisely the same. Readers familiar with theoretical mechanics will not need to be told that we have, in fact, an approximately exact repetition of the forces which cause the pendulum to vibrate in equal periods of time, regardless (within limits) of the "amplitude" of its vibrations. The vibrations of all springs are governed by the same law as the pendulum. A proof within the experience of every one is the vibration of

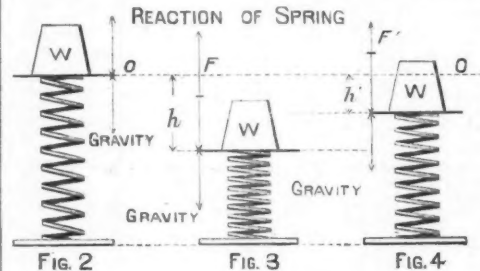


FIG. 2

FIG. 3

FIG. 4

a tuning fork. Strike it as hard or as lightly as we will, it sounds the same note, which is impossible acoustically unless the time of its vibrations is always the same. If a difference exist, it is too slight for the ear to detect.

There is, however, this difference between the pendulum and the spring, that the pendulum encounters little other resistance to its motion than that of the air, while the spring only acts by distortion of its own form, which it takes time and power to effect. Springs of the kind which we are now considering are in other ways inferior to a perfect spring, especially in not deflecting precisely the same amount under equal increments of load. For these and other reasons (1) they quickly come to rest, and (2) their vibrations take place much more slowly than theory would indicate. Springs that ought in theory to make a complete double vibration in from ½ to ¼ of a second, take as a general average (which seems to hold true of nearly all forms of springs, both passenger and freight, now in practical use) something over one second, when tested for that purpose in a testing machine. Therefore, as we are concerned only with what they do do, that period of vibration may be assumed, without discussing the theory of what they ought to do.

The spring of practice also falls short of the spring of theory, as might be expected from the above, in (3) not oscillating in precisely the same time under violent and gentle impulses. It is difficult to test this fact, because without impulses of some considerable violence it is hard to set up any vibration at all, but by such rude tests as we have been able to make in a



Fig. 5.

testing machine, the difference of time varies from something more to something less than a second, the most forcible vibrations seeming to take place most quickly, differing in that respect from the law of the pendulum. No doubt the irregularities may be themselves quite lawless, varying with different springs and degrees of force; but in spite of them all the law holds that the tendency of the spring is to take the same time for vibrations, little or great; in practical







west-bound rates one-third, which means a reduction of probably two-thirds in the net earnings from them, and even then there is suspicion that the reduced rates are not maintained. The prospect of the co-operation of all the lines has been ruined by the notice of the withdrawal of the Grand Trunk and the Chicago & Grand Trunk from the pools, and there are probably some who believe that the organization can do little to maintain rates unless it includes all the competing roads, or at least all of the trunk lines. The completion of two new railroads between New York and Buffalo, which so far have remained outside of the east-bound pool, has further complicated matters. The task undertaken by the organization, or rather the various organizations, under Mr. Fink's direction, was in the first place one of enormous difficulty and complication. To provide methods of doing the work was in itself a most difficult problem; but it was simplicity itself compared with inducing the controlling authorities of all the railroads to accept and carry out these methods. Among these are men of the most diverse character and opinions, including men who are narrow, ignorant, obstinate and tricky. To convince these people that a policy advised by the Commissioner or the Committee is for their advantage, requires extraordinary powers; to induce them to carry it out when by a secret evasion of it they could gain some temporary advantage for themselves has been a never-ending task, requiring diplomatic ability of the first order, which in the nature of things could never be completely successful, as the organization has practically no means of enforcing its agreements except by measures which involve all alike in disaster.

It is not possible to calculate the effect of this organization since it began its work in the middle of 1877 in a part of the field now covered, because no one can say what would have happened without it. Judging by experience, however, the net revenues of the co-operating roads have been increased by its operations in every year except, perhaps, 1881, and very largely in some years; and in all this time the rates made by it have been lower than elsewhere in the world, and extremely low in comparison with local rates and other through rates in this country, and they have declined almost every year, feeling the full effect of the competition of the water routes and of the general industrial situation, from which it is impossible for the railroads to withdraw themselves, however complete their combination.

Whatever the merits of their organization, it, of course, cannot be expected that it will be kept up if it does not effect its purposes and is not likely to. Heretofore, when there has been trouble, as during the railroad war of 1881, all parties, we believe, without any exception, have agreed that the organization should be maintained, as a necessary instrument for use when the war should end. Perhaps the frequent irregularities of the past year have led some to doubt its efficiency hereafter, under any circumstances, but more probably the defection of the Grand Trunk is looked upon as likely to prevent its effecting the good results which would be possible if all the trunk lines were included. Meanwhile the organization costs a considerable amount, insignificant in proportion to the earnings from the traffic which it covers (more than 13,000,000 tons a year, so that an addition to the revenue amounting to one mill per 100 lbs. amounts to \$260,000 a year), but large to pay if no benefits are to be obtained from it.

We imagine, however, that the experience of the past usefulness of the organization has been such that the railroads will not consent to its total destruction, but that they will at least preserve an organization ready to take up the work again, and probably to continue parts of it. Whatever may happen, these railroad companies must have frequent conferences, and they need a central organization which will form a common centre and will be provided with the information on which their negotiations must be based. Here is one ready-made at their hands, with experienced and able officers and employees. If Mr. Fink insists on going (as he has come very near doing two or three times heretofore), the consequences will not be so serious as they would have been a few years ago, for in Mr. Guilford and Mr. Pierson he has two able assistants, who have shown themselves capable of good work, and have earned the confidence and respect of the railroad companies, and there are other subordinate officials who command the peculiar information gathered and recorded in that office, which will be almost indispensable in forming or extending any co-operative combination in the future, a step which is sure to be taken some time.

Mr. Fink's extraordinary services will never be forgotten, whatever may be the present outcome of his

organization. They have made him the great figure of the time in the railroad world, and will give him a permanent name in railroad history. That he should have his efforts to save millions to the railroad companies so often made useless by the folly of the railroad companies themselves may well have discouraged and disgusted him. He has done all that a man could do for them, and he has earned the right to say that he will not longer struggle to help them in spite of themselves; but it is not at all probable that they will consent to deprive themselves of his services permanently. He will have to go to some remote corner of the earth and remain there long, to escape the voice that will call for him to come back and help them.

#### DECEMBER EARNINGS.

Our table of earnings in December has reports from 79 railroads, whose aggregate mileage and earnings and average earnings per mile were:

	1884.	1883.	Inc. or Dec.	P. c.
Miles.....	59,705	57,544	+ 2,161	3.7
Earnings.....	\$30,312,647	\$30,336,168	-\$23,521	0.1
Earn. per mile.....	508	527	- 19	3.6

The total earnings were thus very nearly the same as last year, and but for the increase in mileage the returns would be quite as favorable. But the decrease in earnings per mile is the smallest since May. The percentage of decrease in each of the 12 months of 1884, compared with 1883, was:

	P. c.		P. c.		P. c.
Jan.....	9.1	May.....	2.8	Sept.....	10.2
Feb.....	6.8	June.....	10.9	Oct.....	19.8
March.....	10.8	July.....	7.5	Nov.....	12.5
April (inc.).....	1.5	Aug.....	12.1	Dec.....	3.6

The improvement over the other months since July thus appears very great. But December in 1883 showed a larger decrease from 1882 than previous months of the year, the 75 roads then reporting having a decrease of 5.4 per cent., against 2.8 per cent. in November, and gains in October and September. So, if we compare with 1882, the decrease last December is but little less than in the fall months. We need to bear this in mind this year, for we shall hereafter compare with months when there was a very large decrease in earnings, and consequently earnings as large as last year will not be good earnings, and earnings but a little smaller may be very bad ones.

Of the 79 roads reporting last December 43 had an increase in total earnings, and 34 an increase in earnings per mile.

Five roads in the Far West and south of the Northern Pacific report, showing a decrease of 8.3 per cent. in total earnings and of 7.3 in earnings per mile, and all but the Denver, Rio Grande & Western showing a decrease. The Union Pacific is not included. The same five roads in November had a decrease of \$468,855, against \$321,162 in December. They have not all reported in previous months. The Atchison, Topeka & Santa Fe, which reports a decrease of \$30,000 from 1883, then had a decrease of \$316,222 from 1882, and the Central Pacific's decrease of \$223,458 follows a decrease of \$151,893 the year before; but the two Denver roads together gained more in 1883 than they lost in 1884.

The four roads northwest of St. Paul, in the aggregate, report as follows:

	1884.	1883.	Inc. or Dec.	P. c.
Miles.....	8,871	5,900	+ 2,971	16.
Earnings.....	\$2,189,347	\$1,908,082	+\$281,265	19.8
Earn. per mile.....	317	334	- 17	5.1

All but the Northern Pacific had an increase in total earnings. On that road through traffic was arrested for some three weeks by the snow blockade of its western outlet. The St. Paul & Duluth had the great gain of 29½ per cent.; the Manitoba a gain of 14 per cent. in earnings per mile. In successive months the increases of this group of road, compared with 1883, have been:

	July.	Aug.	Sept.	Oct.	Nov.	Dec.
\$156,320 (Dec.)	\$114,409	\$152,178	\$201,218	\$33,107	\$212,265	

Thus the gain was greater in December than in any other of the six months except October.

The 13 roads west and northwest of Chicago report:

	1884.	1883.	Inc. or Dec.	P. c.
Miles.....	13,703	13,718	- 15	0.1
Earnings.....	\$6,158,781	\$5,993,196	+\$165,585	3.3
Earn. per mile.....	444	435	+ 9	2.1

Thus these roads had a considerable gain in total earnings over 1883, and virtually the same earnings per mile. Seven of them had an increase in total earnings, though every one had a decrease in November. Ten of those roads, with more than 95 per cent. of the earnings of the 13, reported in 1883, and had then a considerable decrease from 1882, and the aggregates of these 10 in 1882 compare as follows with 1884:

	1884.	1883.	Inc. or Dec.	P. c.
Miles.....	13,398	11,997	+ 1,401	11.7
Earnings.....	\$5,992,170	\$5,498,944	+\$493,226	8.5
Earn. per mile.....	443	458	- 15	3.3

This is a favorable comparison, the decrease in earn-

ings per mile being less than might have been expected. Still more favorable is the comparison with previous months, in which the aggregate increases and decreases of the 13 roads were:

	July.	Aug.	Sept.	Oct.	Nov.	Dec.
\$101,281	\$28,757	\$477,685	\$334,777	\$756,605	\$193,385	

The change is great and favorable in December, there having been a decrease in every other one of the six months, and an especially large one in November. These roads in the first half of 1884, however, earned nearly as much as in 1883. They have already profited by a large wheat crop last summer, but most of them had that also the year before; hereafter they will have the benefit of a large corn crop, which few or none of them had last year, and, in spite of great dullness of business, they should make larger earnings than last year in the first half of 1885.

West and southwest of St. Louis seven roads report for December as follows:

	1884.	1883.	Inc. or Dec.	P. c.
Miles.....	2,807	2,775	+ 32	1.1
Earnings.....	\$973,045	\$1,015,938	-\$42,893	4.1
Earn. per mile.....	336	369	- 33	8.2

Here there is a considerable decrease, though three of the seven roads have an increase. Two Texas roads have large decreases; the St. Louis & San Francisco, which has had increases heretofore, and before November large ones, had a large decrease, against an increase of 22½ per cent. for the 11 months previous. The Fort Scott & Gulf continued to show again, and it was larger than in November, but much less than in previous months (6 per cent. in December, against 21½ for 11 months previous). The Vicksburg, Shreveport & Pacific, first opened through a few months ago, really reports quite respectable earnings for a Southern road, notwithstanding its newness (\$327 per mile in December). Only four of these roads reported for 1883, all showing gains and most of them large gains. For previous months in 1881 the increases or decreases of the seven have been:

	July.	Aug.	Sept.	Oct.	Nov.	Dec.
\$150,693	\$44,024	\$74,186	\$116,510	\$21,291	\$11,938	

The comparison is more unfavorable for them in December than in any other month.

North of the Ohio and east of the Chicago & Alton Railroad as far as Pennsylvania 17 roads report for December:

	1884.	1883.	Inc. or Dec.	P. c.
Miles.....	4,482	4,331	+ 151	3.5
Earnings.....	\$4,246,607	\$4,405,445	-\$158,838	3.4
Earn. per mile.....	448	472	- 24	5.1

The 15 of these roads that reported in 1883 had a decrease of \$38,611 over 1882, in spite of an unusual gain by the Wabash. Some of the others had large losses, and the decrease from 1882 to 1884 on a few of the roads has been very great, as below:

	1884.	1883.	Decrease.	P. c.
Chi & West Mich.....	\$84,779	\$123,477	-\$38,698	31.5
Detroit, Lansing & Nor.....	77,807	121,510	-\$43,703	35.9
Flint & Pere Marquette.....	171,733	200,171	-\$28,438	14.2
Pere Marquette, Main Line.....	83,072	124,621	-\$41,549	33.3

The Michigan roads seem to have suffered especially.

For six months the decreases of the 16 of these roads that have reported have been:

	July.	Aug.	Sept.	Oct.	Nov.	Dec.
\$179,449	\$123,159	\$517,940	\$370,408	\$735,753	\$89,274	

Thus their decrease was smallest in December.

As usual, there are no reports from the most important roads in this territory; but the fact that the deficit of the immense Pennsylvania system west of Pittsburgh was less in December than in November indicates that the result shown above is like the general course of earnings in this territory.

South of the Ohio and the Potomac and east of the Mississippi 23 roads report:

	1884.	1883.	Increase.	P. c.
Miles.....	10,717	10,457	+ 260	2.5
Earnings.....	\$4,708,230	\$4,530,676	+\$177,554	3.9
Earn. per mile.....	440	433	+ 7	1.5

Thus this large group shows an increase in earnings per mile, while all others have a decrease. And this is not due to comparing with an unfavorable month in 1883, for the 18 roads that reported both years had in the aggregate an increase of \$157,202 in 1883, and a further increase of \$89,573 in 1884. Fifteen of the 23 had an increase in total earnings last December, and 11 an increase in earnings per mile. There are some notable gains, as 35 per cent. on the Alabama Great Southern, 24 on the Lexington & Big Sandy, 21 by the Memphis & Charleston, and 25½ by the New Orleans & Northeastern and the Columbia & Greenville; and it is also noticeable that all but the last have what are for Southern roads large earnings per mile—exceeding \$300, while the largest in the whole list are \$635 by the Cincinnati Southern, \$620 by the Louisville & Nashville, and \$564 by the Chesapeake & Ohio.

In successive months the increases and decreases of 21 of these roads have been:

	July.	Aug.	Sept.	Oct.	Nov.	Dec.
\$129,866	\$337,002	\$409,627	\$456,348	\$210,874	\$14,937	

Thus the continuous and large decreases since July



were followed in December by an increase, which is a surprising change.

Ten roads in the East—north of the Potomac and east of Ohio—report:

	1884.	1883.	Inc. or Dec.	P. c.
Miles.....	8,247	8,216	+	2.6
Earnings.....	\$8,529,530	\$8,654,7	+	1.0
Earnings per mile..	1,012	1,048	-	3.4

The decrease in total earnings is very small, and in earnings per mile is not large, and there are gains by no less than eight of the ten roads, only the Grand Trunk and the Pennsylvania losing. Some of the gains are large—15 per cent. by the Hoosac Tunnel, 11 by the Long Island and the New York & New England, and 18½ by the New York, Susquehanna & Western. The seven of these roads that reported last year, however, had a decrease of \$472,764 from 1882 to 1883, and their further decrease of \$142,019 from 1883 to 1884 makes the decrease from 1882 large—nearly 10 per cent. The Grand Trunk suffered a decrease of 9½ per cent. in 1883, and another at the same rate in 1884.

It is this large decrease of theirs in December of 1883 which makes the comparison with previous months of 1884 favorable. The decrease of eight of the roads, which was \$112,201 in December, in November was \$908,004.

Generally, December was positively more favorable for many roads than previous months, but for many the comparison is favorable only because the earnings in 1883 were unfavorable. The best showing is by the railroads of the South and the Northwest.

#### The Pacific Railroads' Debt to the Government.

By the terms of the original contract, the principal of the bonds advanced by the government to the Pacific railroads, with the interest on them from date of issue, was to be paid all at once, when the bonds mature, near the close of the present century, the only payments meanwhile being the charges for government transportation and 5 per cent. of the net earnings. The Thurman bill compelled the companies to make some additional provision in advance for the payment of what would become an immense debt, and now they pay into a sinking fund for that purpose 25 per cent. of the surplus of their net earnings over interest charges.

A bill introduced into the Senate last week provides to substitute for this a plan by which the companies will pay their debt in 120 half-yearly installments. This will lengthen by more than 45 years the time before the last of the debt will be due; but installments of it will be actually paid off all the time, while the payments now made go into a sinking fund; and the bill provides also that all the branches built, on which the government has no lien now, shall be mortgaged for the new government "redemption bonds," as they are styled, and the two principal Pacific railroads have a good deal of such property, though the bonds outstanding, which are a prior lien on it, probably do not leave much margin, in the case of many of the branches, to strengthen the government lien. The debt as it will exist at the time the bonds mature is to be capitalized at its value April 1 next, on the basis of 3 per cent. interest. The amount of the debt of each company so ascertained is to be represented by 120 bonds, one of which will be payable every six months, with three per cent. interest. The terms of the law indicate, however, that no interest is to be paid until the bond matures, which is an enormous advantage to the debtor, much like that of the original bonds, but not so striking, because a part of the principal and the accrued interest on that part will be payable yearly.

As the whole debt is now payable within less than 15 years, and the "present value" will be considerably less than the amount that has actually been and will have to be paid by the government; and as the average time of payment by the proposed arrangement will be 30 years instead less than 15, and the rate of interest is much below that on which the strongest American companies can borrow even on a first mortgage, and as even this low interest is not payable till the bonds mature, on the average 30 years hence, the arrangement is very favorable to the railroad companies.

How great the advantage of postponing the interest is, may be known from the fact that the payment of the sixtieth year, say for a bond of \$500,000, would be \$500,000 for principal and \$900,000 for interest, or \$1,400,000 in all, while \$500,000 invested in a 3 per cent. sinking fund will amount to \$2,495,000 in 60 years. By investing \$235,000 in a 3 per cent. sinking fund, the principal and interest of this particular \$500,000 of the "present value" of the debt to the government would be fully provided for. So less than \$330,000 would provide for \$500,000 of principal and interest due the thirtieth, \$334,000 for the same in the fortieth, and \$283,000 for the same in the fiftieth year.

By the last report of the Commissioner of Railroads, the debt of the Pacific railroads to the government July 1 last, after deducting the payments so far made by transportation and the sinking funds, amounted to \$102,835,000. The interest that will accumulate in the 14 years the bonds had still to run will amount to about \$54,284,000, so that the gross debt at the maturity of the bonds would be about \$157,000,000. The present value of this, by the provisions of the bill, allowing 3 per cent. interest not compounded, is 42 per cent. less, or about \$91,000,000, so the yearly installments to be paid (by both companies) would be about \$1,500,000, with interest at 3 per cent.—\$1,545,000 the first year, \$1,950,000 the tenth year, \$2,400,000 the twentieth, \$2,850,000 the thirtieth, and \$4,200,000 the sixtieth year. If the interest on the whole debt were made payable annually, the yearly payments would be \$4,200,000 the first year and decrease by \$45,000 a year till the final payment, and the advantage of the former method to the companies is the interest on the great amount of postponed interest.

Altogether the bill would substitute for a debt whose "present value" is about \$91,000,000, obligations nominally representing the whole of it, but payable on such terms that the "present value," granting it to be perfectly secure, would be very much less than \$91,000,000. Indeed, the present value (based on a 3 per cent. sinking fund) of the \$15,000,000 to be paid, with interest, in the last 10 years would be but \$7,700,000, and of the \$30,000,000 during the last 20 years less than \$17,000,000. The virtual discount on the whole debt would probably be as much as \$20,000,000, effected by giving the use of money without interest.

#### "Reasonable" Rates to Producers and Carriers.

The seventh annual report of the Iowa Railroad Commissioners gives the railroad reports for the year ending June 30, 1884, but brings other matters down to the close of the calendar year. The Iowa Commission always furnishes interesting reports. It was organized in 1878, on the model of the Massachusetts Commission, and seems to have met with the same kind of success. This has been somewhat surprising, for Iowa is a wide and more difficult field of operations than Massachusetts, and the conflict of interests is more marked.

This conflict has reached a critical point, owing to the extremely low price of grain. This affects Iowa more severely than most other states, because it is at so great a distance from market, and it was last year nearly the largest producer of grain, having 362,520,000 bushels of wheat, corn and oats against 375,027,000 in Illinois, and 2,892,000,000 in the whole United States. Thus it had one-eighth of the production of the whole country, and a very much larger proportion of the surplus for shipment, which in states east of Illinois is not very great. Its nearest point to a lake market is about 140 miles distant (from Chicago); its most distant point, about 600 miles.

The position of affairs is this: The farmers claim that railroad rates ought to be reduced to correspond to the reduced price of grain. The railroad men object; first, that the railroads were not allowed to raise their rates when the price of grain advanced a few years ago; second, that it is by no means certain that the farmers would benefit by reduced transportation rates, which, they say, would probably depress the price of grain at Chicago rather than raise it at the local market; third, that they are afraid to try the experiment of lowering rates, because if they once got them down they never would be allowed to raise them again.

The Commissioners are obviously perplexed. They are forced to admit that the first argument of the railroad men is a good answer to the position taken by the farmers. "Those who argue that the price of carriage should be reduced on account of low price of products, without reference to other circumstances, would seem to be logically driven to the conclusion that when prices advance rates should also advance." The Commissioners do not, however, indorse either position. They held in the case of Township Trustees of Red Oaks vs. Chicago, Burlington & Quincy Railroad Co. (Com. Rep., 1882, p. 556) that, "from the standpoint of the carriers' interest it is needless to make a rate less than what is fair and reasonable," and that "from the shippers' standpoint the rate should not be more than fair and reasonable," and they say "the Commissioners still believe the position to be correct." \* \* \* The Commissioners will labor for reasonable rates, insisting as against the carriers that it shall not be more than reasonable, and as against shippers that it shall not be less than reasonable.

It is a pity that men of the experience and ability of the Iowa Commissioners should imagine that these

principles can be applied to the case in hand. If the parts of the conclusion mean anything, the whole is useless. A reasonable rate "from the standpoint of the carrier" is one which gives a reasonable profit above operating expenses. A reasonable rate "from the shipper's standpoint" is one which leaves the shipper a fair margin of profit above cost of production of the goods. The trouble in the present case is that the price of wheat is so low that it is impossible to get a reasonable profit for either party. A rate which is low enough to be reasonable for the shipper will be utterly unreasonable to the railroad, and vice versa. The Commissioners wish to apply two independent standards which cannot be made to meet. The only practical solution of the difficulty is a compromise, based upon a careful consideration of what the traffic will bear, the necessities and interests of the shippers as well as of the railroads being taken into account. But any such compromise is far from meeting the demand of the Commissioners, that it should be reasonable for each party. On the contrary, from the standpoint of either party separately, it will be utterly unreasonable.

We have no doubt that the sagacity of the Iowa Commission would prevent them from making serious trouble by under taking to apply their principle to specific cases, which it did not fit. Even in the decision quoted, they recognized the necessity of considering value of service. But it is none the less a pity that they should enunciate a theory of railroad rates which breaks down at the critical point when you attempt to apply it. And the evil is all the more serious because nine-tenths of the people who read the Iowa report will accept this theory as self-evident truth, and thereby justify themselves in the use of it from their own standpoint without reference to that of any one else.

The low prices have not checked the movement of wheat since harvest, for it has been vastly greater than ever before. For seven years past the wheat and flour receipts at the Northwestern markets from Aug. 1 to Jan. 24 have been:

Year.	Flour, bbls.	Wheat, bu.	Total, bu.
1878-79.....	3,388,992	6,844,663	77,609,067
1879-80.....	3,646,651	6,813,142	77,755,348
1880-81.....	4,538,097	56,071,40	77,483,194
1881-82.....	4,521,379	28,444,788	49,739,8
1882-83.....	5,235,498	54,670,933	79,234,774
1883-84.....	5,013,860	54,247,837	76,840,245
1884-85.....	5,521,132	77,688,305	101,933,549

In the aggregate the receipts this year have been 33 per cent. more than last year, and 27½ per cent. more than in 1879-80, which up to this year were the largest.

There has, however, not been a corresponding movement to the seaboard, the receipts of the Atlantic ports since August having been:

Years.	Flour, bbls.	Wheat, bu.	Total, bu.
1878-79.....	4,802,290	55,744,441	77,024,046
1879-80.....	5,354,892	66,813,142	90,910,156
1880-81.....	6,193,433	55,019,833	122,945,1
1881-82.....	4,938,562	38,422,440	56,702,275
1882-83.....	8,004,234	47,036,537	84,374,470
1883-84.....	6,484,052	25,127,256	54,934,50
1884-85.....	8,922,763	36,170,154	67,225,506

Thus the Atlantic receipts this year, though 24 per cent. more than last year, were nearly 50 per cent. less than in 1882-83, and 25½ per cent. less than in 1879-80, when they were largest.

In 1878-79 the Northwestern receipts at the Atlantic receipts were very nearly equal since that time. The Atlantic receipts have been less or more than the Northwestern receipts as follows:

1879-80.	1880-81.	1881-82.	1882-83.	1883-84.	1884-85.
11,154,808	5,400,000	2,340,327	6,919,006	21,865,055	34,111,853
more.	more.	more.	more.	less.	less.

This change is to some extent due to larger interior consumption and to some extent to accumulations of wheat in store in the interior, but chiefly, probably, to the fact that a much larger proportion of the wheat than formerly was grown in the country west of Chicago and St. Louis, most of which goes to some reporting market, while formerly when crops were large, a great deal was marketed from Ohio, Indiana and Illinois, which passed through no such market.

#### The Iowa Railroad Commission Report.

Some of the more important comparative figures of the Iowa railroads for the years 1882, 1883 and 1884, as given in the forthcoming report of the Board of Railroad Commissioners, are as follows:

	1882.	1883.	1884.
Mileage.....	6,337	7,015	7,240
Stock and debt, pr. mile	\$20,472	38,468	50,244
Gross earnings:			
Proportion for Iowa..	\$32,023,966	\$34,433,355	\$35,735,272
Per mile.....	5,067	5,389	5,481
Per train-mile.....	1.60	1.50	1.47
Operating expenses:			
Proportion for Iowa..	\$20,512,393	\$22,827,453	\$23,550,916
Per mile.....	3,353	3,389	3,303
Per train-mile.....	(7) 75	.93	.94
Per cent. of earnings.	63.0	63.0	64.0
Mileage of trains earning revenue (not exclusively in Iowa).....	64,426,111	66,368,208	71,023,617
Passenger mile-gage.....	787,021,961	9,822,711	993,314,063
Average fare per mile, cents.....	2.75	2.67	2.52
Ton mileage.....	4,631,564,735	5,420,260,374	6,063,716,737
Average rate, cents.....	1.19	1.24	1.20

The business for the year ending June 30, 1882, thus makes a good showing as compared with that of the previous year in



spite of the slight decrease in rates. The income was slightly less per train-mile (a falling off due entirely to the passenger business), but greater per mile of road. As compared with the figures for 1881-82, we find an absolute increase of business, but a large relative falling off when compared with the amount of railroad service. Some slight discrepancies in this table are explained by the fact that the percentages were generally calculated for the total business of the roads, and not for the Iowa portion only.

After careful equalization of the figures, the Commissioners conclude that the actual average receipt for freight per ton-mile is 1.211 cents, and the average cost of doing the work 0.785 cents.

The peculiar state of things still continues by which the mileage of loaded cars west and north is decidedly greater than that east and south (335,908,572 against 313,753,648). The Commissioners endeavor to explain it partly by the condensed form which the products of agriculture are assuming, and partly by the demand for lumber for building in regions which are practically devoid of it.

The statistics of accidents call for no detailed notice. The Board recited at length the action of Massachusetts concerning automatic car-couplers, and indorses it strongly, but makes no specific recommendations on the subject.

There is a full discussion of two or three complaints which involve important matters of public policy. The granting of special rates to jobbers, which a majority of the Commission a year ago held valid, was voluntarily abandoned by the railroads in response to the popular clamor. The Commissioners are of opinion that this change of policy in the direction of uniform rates is likely to be injurious to the interests of the state. They discuss at some length the economic principles involved.

A point of more general interest relates to a question of their jurisdiction over inter-state commerce. In the case of Barber vs. Chicago & Northwestern Railway Company, complaint of overcharge was made because business which originated just outside of the state was charged about 50 per cent. more than the rates which were given on business originating in Iowa itself. The answer of the railroad did not go into the merits of the case, but simply denied the jurisdiction of the Commissioners. Two out of the three Commissioners refused to admit the defense of the railroad, and maintained that they had jurisdiction. They admit that statutes fixing maximum rates cannot be applied to inter-state commerce; but they insist that a statute prohibiting unjust discrimination stands on a different footing from one which fixes maximum rates. Whatever may be the final outcome, it is remarkable that so conservative a body as the Iowa Commission should take this ground.

A law has recently been passed increasing the power of the Iowa Commission. Hitherto, they have had, like the Massachusetts Commission, simply the power to report publicly cases of failure to comply with their decisions. The new law makes their orders directly enforceable in the state courts in all cases where a matter of public right is involved. This may perhaps strengthen their hands; but it may also have the effect of weakening their moral influence in a way for which their greater direct power will be but poor compensation. This change was in nowise sought, and apparently not desired, by the Commissioners themselves.

How far a body of men who are the agents of the people of the state of Iowa are from representing the owners of the railroad property in that state, is shown most emphatically in this report itself. The Commissioners say that the number of persons owning the stock of Iowa railroads is 25,900, of whom only 740 live in Iowa. The Iowa stockholders own \$8,620,341 of the total of \$390,586,766, or only 2 1/4 per cent. of the whole. One may imagine how little direct influence 740 railroad proprietors can exercise on the legislation and administration of a state like Iowa, with its 1,800,000 inhabitants.

"This great interest," say the Commissioners truly, "is thus practically without representation in the General Assembly." It is creditable to the Commissioners that they recognize this fact, and have felt impelled in their action to have regard to the rights of these absent investors, as well as those of their own employers, who are substantially all buyers and none of them sellers of the transportation which the Commissioners supervise.

Last week was a great week for eastward shipments from Chicago, notwithstanding the obstructed condition of some of the railroads, the aggregate through shipments having been among the largest ever made, amounting to 75,737 tons, which is 10,000 tons more than when they were largest last year, in the winter months. For six successive years the shipments of this week have been, in tons:

1880. 1881. 1882. 1883. 1884. 1885.

41,775 53,300 73,425 45,029 40,727 75,737

Thus the shipments this year were 86 per cent. more than last year and much more than in any other year except 1882, when the immense shipments at the 10 and 12 1/2-cent rates were culminating.

The shipments for six successive weeks and the percentages going by each railroad have been:

Tons.	Week ending.					
	Dec. 27.	Jan. 3.	Jan. 10.	Jan. 17.	Jan. 24.	Jan. 31.
Flour	8,122	9,394	11,826	10,905	7,247	14,914
Grain	16,938	19,362	19,772	42,977	32,965	50,340
Provisions	9,324	10,648	13,003	19,171	10,088	10,483
Total	34,384	39,404	54,611	67,053	50,330	75,737
Per cent.:						
C. & Grand Tr.	15.5	20.4	19.3	15.8	11.0	6.5
Mich. Central	22.5	20.0	24.3	29.0	24.4	29.0
Lake Shore	11.7	14.5	9.0	12.3	17.7	21.3
Nickel Plate	17.2	11.5	13.3	8.3	6.4	4.5
Fort Wayne	13.4	15.0	14.9	7.7	8.8	13.6
C. St. L. & P.	6.0	6.3	6.1	8.4	14.4	7.4
Balt. & Ohio	9.2	7.2	7.6	6.3	3.6	7.0
Ch. & Atlantic	4.5	5.1	5.5	12.2	13.7	10.7
Total	100.0	100.0	100.0	100.0	100.0	100.0

The offerings of freight, it may be assumed, have been about the same in each of the last three weeks, and the increase last week merely the forwarding of what was delayed by obstructions the week before, giving an average of 64,380 tons per week for the three weeks. How much of this was engaged at the 20 cent rate of week before last it would be interesting to know. With such offerings, the rates at which they were taken can probably be sustained without difficulty, but if the rate at which the greater part of them was taken was as low as 20 cents, then it is not likely that offerings will be as large hereafter. It is noticeable that the provision shipments were not more but less than the average of the last five weeks last week, and as it is reported that rates were better maintained on provisions than on grain and flour, this may have been the cause. It is especially foolish to reduce provision rates, as the aggregate shipments of the year will not be increased a pound thereby, and substantially the whole will go by rail in any event. Lower rates on grain, however, may cause large amounts to be shipped now by rail which otherwise would be held two or three months and then shipped by lake.

The percentages going by the different roads last week have important changes. There is a further large decrease on the Grand Trunk, which carried but half its share, and the short- age of 6 1/2 per cent. of the very large shipments of the week will go far towards reducing its excess in the pool. The Michigan Central, however, made a further increase over its proportion, and the Lake Shore increased its share largely; the Fort Wayne recovered from the low position of the two weeks previous, caused doubtless by the strike at Fort Wayne, and the Chicago, St. Louis & Pittsburgh lost more than the Fort Wayne gained. The Chicago & Atlantic carried more than its share, which in a week of such large shipments means carrying a great deal. Although the Nickel Plate carried an unusually small percentage, the three Vanderbilt roads together carried 54.8 per cent. of the total great shipments, and the two Pennsylvania roads only 20.6 per cent. Of the Vanderbilt roads only the Lake Shore is short in the pool. The weather may have a great effect on the percentages at this season, as some lines remain open when others are obstructed and this throws additional business on the open roads. Last week it would appear that the Michigan Central and the Lake Shore were entirely unobstructed, as they took unusually large proportions of an extraordinarily large business.

The final estimates of the Department of Agriculture give 1,175 1/2 million bushels, of the total corn crops of 1,795 1/2 millions, to the seven great corn states, Ohio, Indiana, Illinois, Iowa, Missouri, Nebraska and Kansas. The production in the three states east and the four west of the Mississippi in successive years has been, in millions of bushels:

	1879.	1880.	1881.	1882.	1883.	1884.
Ohio, Ind., and Ill.	553.2	459.6	336.1	383.1	373.0	434.7
Iowa, Mo., Neb. & Kan.	648.6	586.4	401.7	572.5	605.3	741.0

Total.....1,201.8 1,046.0 737.8 955.6 978.3 1,175.7

The total is thus much greater than in any of the three years previous, but is a little less than in 1879. East of the Mississippi the increase over 1883 is 17 per cent.; west of it, 22 1/2 per cent. Compared with 1882 the increase is 13 per cent. east and 30 per cent. west of that river, and compared with 1879 there is a decrease of 21 1/2 per cent. east and an increase of 14 per cent. west.

The percentage west of the Mississippi has been:

	1879.	1880.	1881.	1882.	1883.	1884.
	54.0	56.1	54.5	60.6	61.8	63.0

The proportion grown west of the Mississippi has increased almost continuously.

The greatest changes from 1879 to 1884 have been in Illinois, Kansas and Nebraska, Illinois producing 81 million bushels less, Kansas 63 millions, and Nebraska 57 millions more.

The actual production of each of these seven states in each of the last six years has been, in millions of bushels:

	1879.	1880.	1881.	1882.	1883.	1884.
Ohio.....	111.9	119.9	79.8	93.3	73.6	85.4
Ind.....	115.5	99.2	79.6	107.5	95.6	104.8
Ill.....	325.8	240.5	176.7	182.3	203.8	244.5
Iowa.....	275.0	280.2	173.3	175.5	169.6	232.6
Mo.....	202.5	160.5	93.1	170.0	161.7	197.8
Kan.....	105.7	106.2	76.4	144.5	172.8	168.5
Neb.....	65.0	59.5	38.9	82.5	101.3	122.1

Only Kansas and Nebraska produced as much in 1884 as in 1879, when the yield was extraordinary. In Ohio and Illinois there appears a tendency to decrease, Indiana about holds its own, Missouri and Iowa gain somewhat, while Kansas and Nebraska gain largely.

The gain over 1883, however, is chiefly in the older states, and the fact that Iowa produced 50 per cent., Missouri 22 1/2 per cent., Illinois 20 per cent. more than then must have a very considerable effect on their traffic. The increase over 1883 in corn production in these seven states is equal in bushels to more than five-sixths of their entire wheat production last year.

The gross earnings of the Illinois Central Railroad Company on its several divisions for the last seven years have been:

Year.	Ill. lines.	Southern Div.	Iowa lines.	Total.
1884.....	\$6,187,768	\$4,318,218	\$1,704,048	\$12,210,034
1883.....	6,074,783	4,364,930	2,025,110	13,064,743
1882.....	6,959,760	3,848,537	1,945,532	12,753,849
1881.....	6,733,954	4,059,151	1,852,443	12,645,548
1880.....	6,529,324	3,716,902	1,775,487	12,021,713
1879.....	5,711,282	3,357,305	1,523,182	10,591,769
1878.....	5,572,620	2,842,434	1,538,558	9,953,612

This indicates that the possession of the Southern Division was of very great importance to the company last year, as the earnings of that were well maintained, being very little less than in 1883, while the earnings of the Illinois lines were nearly 8 per cent. less than in 1883, 11 per cent. less than in 1882, and the smallest since 1879; and the earnings of the Iowa lines were 16 per cent. less than in 1883, and also the

smallest since 1879. The aggregate earnings of the three systems were the smallest since 1880, and were \$854,689 (6 1/2 per cent.) less than in 1883.

The decrease in net earnings from 1883 to 1884 was \$468,157, which is nearly 9 per cent. and equal to \$1.61 per share of stock.

The surplus over fixed charges last year was \$2,839,696, which is \$9.79 per share of stock. After paying 8 per cent. dividends, there remained a balance of \$519,696—a very favorable result in view of the great decrease in the earnings of the Illinois and the Iowa lines.

At the half-yearly meeting of the Great Indian Peninsula Railway Company in London recently, the Chairman explained a decrease of \$430,000 in the receipts of the railroad for carrying wheat in the first half of 1884 by the low prices. "The wheat crop," he said, "although a very fine one, was unsalable to a great extent, owing to the cheaper rate at which wheat is landed at Liverpool from America and other countries, which to a great extent beats the East Indian wheat out of the market. This is a matter which we cannot control, I am sorry to say. I wish we could." If Indian wheat could not be exported at the prices of the first half of last year, it certainly cannot be now, when the price is so much lower. And the Indian exports actually are much less than they used to be. For the eleven months ending with November last the imports into the United Kingdom from India were 14,120,000 bushels, against 19,300,000 in 1883, while in the month of November the imports from India were 44 per cent. less than in 1883. For the eleven months the percentage of the total British imports of wheat from leading sources of supply have been:

	1882.	1883.	1884.
Russia.....	14.7	21.2	11.5
United States:			
Atlantic ports.....	31.1	21.6	30.8
Pacific ports.....	23.7	18.9	17.2
India.....	13.1	17.0	16.6
Australia.....	4.1	4.2	10.5
Four countries.....	86.7	82.9	86.6

Thus the imports from this country were 54.8 per cent. of the whole in 1882, 40.5 in 1883 and 48.0 per cent. in 1884—which, certainly, does not look much like losing our export business. Oregon and California alone have sent more wheat than India to England every year, and it is, in fact, Oregon and California that have been the most formidable competitors of our Atlantic coast for the export trade, their production having grown rapidly of late years, and little of it being required for home consumption. In 1884 the British home supply was so great that the total imports were reduced 27 1/2 per cent.

But these figures do not show how great a supply of the bread of Great Britain is supplied from this country, for besides wheat it receives flour equivalent last year to 43 per cent. of its wheat receipts, and 68 per cent. of its flour came from the United States, and none from India. Taking flour and wheat together, 54 per cent. of the British imports last year were from the United States, and only 11 1/2 per cent. from India, 10 1/2 per cent. from Australia, 8 per cent. from Russia, and 5 per cent. from Germany.

There is therefore no country which remotely approaches the United States in the amount of breadstuffs that it supplies to Great Britain.

The extent to which the grain exports have been diverted from the sailing vessels to the steamers is indicated by the fact that of 45,393,787 bushels exported last year only 2,431,988 bushels, or 5 1/2 per cent. of the whole, went by sailing vessels. Probably from no other port except Boston is the proportion going by sail so small. The steamers frequently make lower rates than the sailing vessels, because they take grain to fill out cargoes of freight that pay higher rates, and accept whatever rates will command the shipments, while the sailing vessels usually get no other freight, and so must have a paying rate on grain to justify their sailing. The steamers, however, mostly ply on regular routes, and consequently can deliver at but one European port, and the additional cost of transferring from Liverpool, etc., to other European ports often makes it better for the shipper to pay a higher price to have his grain carried directly to a port near where the grain is to be consumed. The "tramp" steamers undertake this transportation as well as the sailing vessels. Altogether 1,120 steamers carried grain abroad from New York last year, and only 101 sailing vessels. The average shipment per steamer was 38,358 bushels; per sailing vessel, 24,070 bushels. This is but a fraction of the load of most of the ocean steamers, but it was probably pretty nearly the full load of the sailing vessels.

The Chief Engineer of an important railroad asks where he can procure a machine for taking the shape of rails in track. He finds some rails which have been 12 years in track have worn less than 1/8 in., while others have worn as much in two years, and wishes to investigate the matter. Machines for this purpose were illustrated in the Railroad Gazette of March 7, and June 6, 1879, and others have been designed; but we do not know of any manufactured for sale.

Perhaps as easy and satisfactory a way of taking rail sections as any, however, is with plaster of Paris; a little sheet-iron box in two halves being made to inclose the rail, stopping the large cracks with putty or mud. The mixing and setting of the plaster takes but a few minutes, and the mold is then cut apart along the centre line (just before the plaster sets hard) by a fine wire at top and bottom of the rail, previously placed in position. From this mold a plaster cast may be taken later if desired. The whole operation takes but little longer than with a machine, after becoming some-



what expert by office practice, and the mold is too light an affair to derail a train, even if one should run over it by accident.

After all that has been said concerning the danger to American petroleum exports on account of Russian competition, it appears that the Russian oil is consumed only to an insignificant extent outside of Russia. In Germany, which is adjacent and has a larger population than any other European country, the imports of Russian petroleum were less than 2,080,000 gallons of Russian oil were imported, which was only 1.6 per cent. of the total imports. In Austria-Hungary in 1883 the exports from Russia were 737,000 gallons, unless those from Roumania came originally from Russia, and these were 5,182,000 gallons, and these together were but 16 per cent. of the total imports. All this together is less than one week's exports from the United States. Russia, however, has been captured by the Russian oil, 85 per cent. of its supply now coming from the Baku wells.

The Iowa code provides that railroad employes may receive damages for injuries sustained by reason of the fault of a fellow employe. In a case brought under the law the railroad company pleaded that the law is unconstitutional, because it subjects railroads to penalties to which other employers were not liable. But the Supreme Court of Iowa held that the law was within the discretion of the state legislature, and therefore valid.

On the Central Railroad of New Jersey, about the middle of January, there was a curious breakage of a driving-wheel tire, in which a section of the tire about two feet long was flung up under the floor of the fourth car from the engine, and caught there in the timbers, where it remained hanging when the car was stopped. Presumably, it was thrown into that position when struck by the forward truck of this car.

The letter of Mr. N. W. Wheeler as to coal consumption of lake and ocean steamers, to which we referred last week, originally contributed to the *Mechanical Engineer* and not to the *American Manufacturer*, to which latter it was erroneously credited.

A correspondent asks if a spike driven in the crotch of a tree for a bench-mark will change its elevation to any degree.

It was gravely recorded some years ago that a certain tree carrying a bench-mark for a bridge in India grew several feet during the period of construction. Whether this was intended as a proof of the luxuriant vegetation of India or as a satire on the delays of construction did not appear from the form of the statement, which appeared to be intended as a serious argument against the use of trees for such purposes. In this country a shoulder cut on the roots of a large tree, or even a small one, is usually considered safe against any appreciable change of elevation during the time that it is required, and is the only form of bench-mark in wide and general use for railroad work.

The London & Brighton Railway Company (England) lately accurately ascertained the daily number of stoppages made by its trains. Out of a total of 17,000 stops in 24 hours only 10,000 were regular station stops, the remaining 7,000 being irregular stops between stations, waiting for the line-clear signals, etc. The traffic on this line is chiefly suburban and local passenger, and the loss of time and money on 7,000 extra stops per diem must amount to a large figure. Reckoning each stop at only 3 minutes, the loss amounts to 350 hours per day, and taking the wages of a crew working a train at 1s. 9d. per hour, or 42 cents, the annual loss due to this item alone amounts to nearly \$50,000 per annum—rather a large sum to pay for the privilege of having more traffic than can be handled conveniently. This line is worked on the block system throughout.

In forecasting the probable future construction of railroads in countries which buy their materials in England, Matheson & Grant's engineering trades report counts on a demand for extensions and renewals in India, in Australia, where large sums have been voted for the purpose, in Canada, South Africa, the Argentine Republic, and, later, in Brazil and Mexico, where it says "progress will soon recommence." It also says that in time there are signs that in China "the country is about to be opened to European improvements." These signs are not very distinctly seen elsewhere, but it is probable that actual war with France might lead China to build some railroad to assist in its military operations, and if so, the way would probably be opened for a Chinese railroad system.

#### Record of New Railroad Construction.

Information of the laying of track on new railroads in the current year is given in the present number of the *Railroad Gazette* as follows:

*Georgia Pacific*.—Extended from Patton Mine, Ala., eastward to Day's Gap, 5 miles.

*Wrightsville & Tennille*.—Completed to a point fifteen miles southward from Tennille, Ga., an extension of 5 miles.

This is a total of 10 miles, making 36 miles thus far reported for 1885. The new track laid to the corresponding date for 14 years past has been:

	Miles.		Miles.
1885.....	36	1878.....	84
1884.....	83	1877.....	42
1883.....	79	1876.....	70
1882.....	192	1875.....	62
1881.....	110	1874.....	32
1880.....	176	1873.....	210
1879.....	70	1872.....	70

This statement covers main track only, second tracks and sidings not being included.

#### Notes in Virginia.

##### NORFOLK.

Norfolk and its closely adjacent neighbor, Portsmouth, virtually form one town of about 50,000 inhabitants, the terminus of several railroads. The principal industry of the immediate neighborhood is growing vegetables or "truck" for the New York, Baltimore and Philadelphia markets, and as rapid and certain transit is a great desideratum, the time taken by the steamers running from Norfolk to those ports has led to the construction of a new route in connection with the Philadelphia, Wilmington & Baltimore. The terminus of this line, near the extremity of the Delaware peninsula, is reached by steamer from Norfolk. Growers look forward to the trip being made to New York in 13 hours, the cars on the transfer steamer leaving Norfolk at 3 p. m., and arriving in Jersey City at 4 a. m., but this schedule is not yet in operation. Berries and various vegetables, according to the season, are shipped continuously from Feb. 1 to Nov. 1.

The Seaboard & Roanoke Railroad (which has its terminus at Portsmouth, on the left-hand bank of the Elizabeth River and opposite Norfolk) has just completed a transfer steamer to take its freight cars across the river without breaking bulk. It is in contemplation to carry freight in the same way across Chesapeake Bay to the terminus of the New York, Philadelphia & Norfolk, so that cars loaded at inland points on the Seaboard & Roanoke line may go directly north.

The Seaboard & Roanoke Railroad is one of the few Southern roads on the 4 ft. 8½ in. gauge. Its business is chiefly in freight, bringing down cotton, turpentine, rosin, peanuts, etc., to the coast and taking back guano, etc. The engines are all of the American type, with 16 in. x 24 in. cylinders and 54-in. wheels, and are found to answer well for both passenger and freight service. At present all the engines burn wood, the switchers, however, in the town of Portsmouth burning coke. All the engines are to be changed to coal-burners in a few months. The grades on the road are light, one grade of 38 ft. to the mile two miles in length being the worst.

The engines will haul 30 loaded cars up this grade. Most of the engines are built either at the Taunton Locomotive Works or at the company's own shops at Portsmouth. They present no great peculiarity, but are neatly finished. The boiler and fire-box are made of Otis steel throughout. The piston packing rings are of brass, with diamond-shaped cavities, which are filled with Babbitt metal. This ring is found to wear well, running a couple of years.

Most of the shops are old, one dating back to 1840. The foundry, however, is a new shop just completed, and well lighted and ventilated. All the castings, brass and iron, for both locomotive and permanent way departments, are made here, with the exception of chilled car-wheels, which are bought from makers.

The car shop is small and inconvenient, but a new and enlarged shop is in contemplation. The company builds some of its own freight cars. Its standard box-car has 40,000 lbs. capacity, and is provided with a convenient arrangement of continuous draw-bar, relieving the body of the car of the strain due to the traction of the train. It is also provided with small louvre ventilators in the sides near the ends.

This road has several large freight houses on the quays lit by electric light, and well adapted for shipping and storing cotton and other freight.

The Norfolk & Western has a very fine passenger station in Norfolk and a large coal-shipping pier at the upper end of the harbor, while another is being constructed a few miles below the town, nearer Fortress Monroe.

The Chesapeake & Ohio has a fine elevator with a capacity of 1,600,000 bushels at Newport News, at the mouth of the James River, a few miles from Norfolk and 75 miles from Richmond. There is also a fine coal-shipping pier here, and a large freight yard. The railroad has a large tract of perfectly level land here, and, as the piers are in deep water, easily kept clear by a little dredging, it seems probable that a large town will ultimately grow up at this point, though at present business seems slack, few vessels lying at the large piers when the writer passed through.

Messrs. T. W. Godwin & Co. have works close to the quay at Norfolk, and do a considerable business in repairing steamers, etc., collisions in fogs being of somewhat frequent occurrence in this neighborhood. This firm also builds narrow-gauge locomotives, shipping some of them a considerable distance west, many being now at work on the Des Moines and other narrow-gauge divisions of the Wabash, St. Louis & Pacific. Others have been running for several years on a local line to a seaside resort, Ocean View, opposite Old Point Comfort. Small logging roads also take quite a number of small engines, but this business is like others, not brisk at present.

Norfolk is, however, a busy, bustling place, and its crowded streets and wharves give the idea of prosperity, despite complaints as to hard times.

#### General Railroad News.

##### MEETINGS AND ANNOUNCEMENTS.

###### Meetings.

Meetings of the stockholders of railroad companies will be held as follows:

*Addison & Northern Pennsylvania*, annual meeting at the office, in New York, Feb. 17.

*Boston & Albany*, annual meeting at the Meimnon, in Boston, at 11 a. m., Feb. 11.

*Delaware, Lackawanna & Western*, annual meeting at the office, No. 26 Exchange place, New York, at 10 a. m., Feb. 24.

*Grand Rapids & Indiana*, annual meeting at the office, in Grand Rapids, Mich., March 4.

*Illinois Central*, annual meeting at the office, in Chicago, March 11.

*Texas & Pacific*, annual meeting at the office, No. 195 Broadway, New York, March 3, at noon. Transfer books close Feb. 3.

#### Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

*Connecticut & Passumpsic Rivers*, 2½ per cent., semi-annual, payable Feb. 2, on the preferred stock.

*Detroit, Lansing & Northern*, 3½ per cent., semi-annual, on the preferred stock, payable Feb. 16, to stockholders of record on Feb. 5.

*New York, Providence & Boston*, 2 per cent., quarterly, payable Feb. 10.

#### Railroad and Technical Conventions.

Meetings and conventions of railroad associations and technical societies will be held as follows:

The *Western Association of General Passenger & Ticket Agents* will hold its annual meeting at the Galt House, in Louisville, Ky., on Wednesday, Feb. 11.

The *American Institute of Mining Engineers* will hold its annual meeting in New York, beginning on Tuesday evening, Feb. 17.

The *National Association of General Passenger & Ticket Agents* will hold its next meeting in New Orleans, on Tuesday, March 17.

The *Southern Time Convention* will hold its spring meeting in New Orleans, Wednesday, March 25.

The *General Time Convention* will meet at the Lindell Hotel, in St. Louis, on Wednesday, April 8.

The *Association of American Railroad Superintendents* will hold its half-yearly meeting in Richmond, Va., on Wednesday, April 15.

The *American Association of Train Dispatchers* will hold its annual convention in Denver, Col., on Wednesday, June 3.

The *Car Accountants' Association* will hold its annual convention at Minneapolis, Minn., beginning on Tuesday, June 23.

The *Master Car-Builders' Club* will hold regular meetings at its rooms, No. 113 Liberty street, New York, on the evening of the third Thursday in each month.

The *New England Railroad Club* will hold its regular meetings at its rooms in the Boston & Albany station, in Boston, on the evening of the fourth Wednesday in each month.

The *Western Railway Club* will hold regular meetings at its rooms, No. 103 Adams street, Chicago, on the third Wednesday in each month.

#### ELECTIONS AND APPOINTMENTS.

*Baltimore & Ohio*.—Mr. Thomas Taylor, recently at the Newark shops, has been appointed Master Mechanic in charge of the shops at Sandusky, O. Mr. N. Criswell has been appointed Master Mechanic of the Newark, Somerset & Straitsville Division, with office at Shawnee, O.

Mr. I. N. Kalbaugh has been appointed Master Mechanic of the Pittsburgh Division in place of J. E. Sampsel, resigned.

*Brooklyn, Bath & Coney Island*.—Mr. George W. Pearsall has been appointed Receiver of this road.

*Chesapeake & Ohio; Kentucky Central; Chesapeake, Ohio & Southwestern; Louisville, New Orleans & Texas*.—Mr. William Mahl has been appointed Comptroller of all these companies, which together form the Huntington line from Newport News to New Orleans. Mr. Mahl's railroad service began as a youth on the Louisville & Nashville under Mr. Albert Fink. He was four years Auditor of the Louisville, Cincinnati & Lexington, held the same position for a time on the Texas & Pacific, and then was for some years Superintendent of the Louisville, Cincinnati & Lexington. For some years past he has held a confidential position in connection with the Huntington roads. He is an exceptionally well informed man with regard to the operation of railroads, as well as an accountant. The circulars appointing Mr. Mahl gives him charge "of the supervision and direction of all the accounts of the company, and the enforcement of the system prescribed for it," and say "that he will attend to such duties as are assigned to him from time to time by the President," whence it is probable that he will continue to act as an inspecting officer at times.

*Chicago, Burlington & Quincy*.—Mr. James Bartel has been appointed Third Assistant General Freight Agent of this road. Mr. M. Wakely succeeds Mr. Bartel as Chief Clerk.

*Chicago, Milwaukee & St. Paul*.—Mr. A. R. Daugherty has been appointed Traveling Passenger Agent of this company, with headquarters at 306 Washington street, Boston.

*Columbus & Western*.—At the recent annual meeting the following directors were elected: W. G. Raoul, W. L. Clark, H. H. Epping, E. A. Flewellen, G. P. Harrison, Jr., B. T. Hatcher, T. B. Gresham and George J. Willis. At a subsequent meeting of the board, the following officers were elected: W. G. Raoul, President; E. A. Flewellen, General Manager and Chief Engineer; Edward McIntyre, Treasurer; Andrew Anderson, Secretary.

*Columbus & Xenia*.—At the annual meeting in Columbus, O., Jan. 29, the following directors were chosen: John W. Andrews, C. P. Cassilly, Henry Hanna, Wm. B. Hayden, R. A. Harrison, P. W. Huntington, Thomas D. Messler, Henry C. Noble, George W. Parsons, Robert S. Smith, James A. Swan, Alfred Thomas. The road is leased to the Pittsburgh, Cincinnati & St. Louis.

*Connecticut & Passumpsic Rivers*.—Mr. W. J. Willard has been appointed General Freight Agent, with office at Lyndonville, Vermont.

*Coudersport & Port Allegheny*.—The officers re-elected by the new board are: President, F. W. Knox; Vice-President, C. V. B. Barse; Secretary, A. B. Mann; Treasurer, M. W. Barse; Superintendent, B. A. McClure.

*Delaware Division Canal Co.*—At the annual meeting of the stockholders in Philadelphia, Feb. 3, the following managers were elected: J. W. Woolston, I. V. Williamson, J. S. Harris, E. W. Clark, F. C. Yarnall, S. F. Corlies, F. R. Cope, E. Roberts, Jr., T. McKean.

*Elmira, Cortland & Northern*.—Mr. T. H. Sears has been appointed Superintendent of Transportation.

*Huntington & Broad Top Mountain*.—At the annual meeting at Philadelphia, Feb. 3, the following board was elected: President, B. Andrews Knight; directors, Rathmel Wilson, John Devereux, I. V. Williamson, James Long, James Whitaker, William P. Jenks, C. W. Wharton, Thomas R. Patton, Jacob Naylor, Spencer M. Janney, William J. Barr, M. E. McDowell.

*Kansas City, Wichita & Indian Territory*.—The directors of this new company are: J. W. Hartzell, O. H. Bentley, H. L. Jackson, H. W. Lewis, A. A. Hyde, Wichita, Kan.; L. W. Head, Topeka, Kansas.

*Louisville, Evansville & St. Louis*.—Mr. J. E. Mulvihill has been appointed Car Accountant, with office at New Albany, Indiana.

*Neillsville & Lake Superior*.—The directors of this new company are: Jacob Huntseker, Eaton, Wis.; W. H. Mead, Warner, Wis.; H. N. Withee, Dixon, Wis.; D. B. Maues,



Pine Valley, Wis.; Richard Dewhurst, James L. Gates, James Hewitt, R. F. Kountze, F. D. Lindsay, G. L. Lloyd, C. C. Snitman, Neillsville, Wisconsin.

**New York City & Northern.**—Mr. Joel B. Erhardt has been appointed Receiver in place of Arthur Leary, retired.

**New York & New England.**—Receiver Clark has issued the following notice: "Much to the regret of the Receiver, William Caleb Loring, Esq., has again resigned the office of General Solicitor. Correspondence upon legal matters should now be addressed to H. E. Ball, Assistant General Solicitor. Mr. Loring retains the position of General Counsel."

**New York, Texas & Mexican.**—At the annual meeting in Victoria, Tex., Jan. 30, the following directors were elected: D. E. Hungerford, J. Payne, J. M. Brownson, E. D. Linn, Edward Seeligson, A. M. McCoy, Isaac Herdenheimer. The board elected the following officers: President, E. D. Hungerford; Vice-President and General Manager, Allen McCoy; Secretary, E. D. Linn; Treasurer, J. M. Brownson.

**Oregon & California.**—The Court has withdrawn the appointment of A. G. Cunningham as one of the Receivers, leaving Mr. R. Koehler as sole Receiver of the road.

**Owensboro & Nashville.**—Mr. E. C. Harris has been appointed Chief Train Dispatcher in place of W. C. Sutherland, resigned.

**Pittsburgh & Reading.**—The following circular from the Receivers is dated Philadelphia, Jan. 23:

"Mr. H. K. Nichols is appointed Chief Engineer in place of Mr. William Lorenz, deceased, and Mr. Edwin F. Smith is appointed his Assistant."

"Mr. Nichols will have control of the location and construction of all new work, and will also have charge of maintaining and repairing the railroads and canals of the company, their appliances and structures, and will report to the General Manager."

"Mr. Smith will perform such duties as may be assigned to him by the Chief Engineer, to whom he will report. His office will be at Reading."

"The Chief Engineer will reorganize the Engineering Department, and make such assignments of the persons employed therein as will tend to secure its most efficient and economical management."

"The offices of the Chief Road-master and Chief Engineer of Canals are hereby discontinued."

**Providence & Worcester.**—At the annual meeting in Providence, R. I., Feb. 2, the following directors were elected: Eben Lynde, Gilson L. Spencer, Elijah B. Stoddard, Lyman A. Cook, Moses B. I. Gollard, Frederick Grinnell, Joseph E. Davis, Oscar J. Rathbun, David K. Phillips, Josiah Lassell, Jonas G. Clark, Benjamin F. Thurston, Charles E. Whitin, John W. Danielson and William C. Chamberlain.

**St. Clairsville & Northern.**—Mr. D. H. Milligan, of St. Clairsville, O., has been appointed Receiver.

**St. John Bridge & Railway Extension Co.**—At the annual meeting in St. John, N. B., Jan. 13, the following directors were chosen: Hon. Thomas R. Jones, Frederick E. Barker, Payson Tucker, James Murray Kay, Arthur Sewall, Hon. Robert Robinson and John H. Parks. The officers elected for the ensuing year are: President, Hon. Thomas R. Jones; Secretary, T. Barclay Robinson; Treasurer, James Murray Kay; Solicitor, Frederick E. Barker.

**St. Paul, Minneapolis & Manitoba.**—Mr. H. C. Ives is appointed Assistant General Manager of the lines of this company, with office at St. Paul, Minn., appointment in effect from Feb. 1. Superintendents, heads of departments and other employees having business with the general office will report to and correspond and confer with him on all matters connected with the operation of the line.

**Springfield & New London.**—At the annual meeting in Springfield, Mass., Jan. 29, the following directors were chosen: C. L. Covell, William Birnie, James Kirkham, Henry M. Phillips, Charles L. Long, Edwin D. Metcalf, John M. Stoddard, Edwin W. Laid, Henry Fuller, Jr., Julius H. Appleton, Horace Smith, Marcellus Pinsky, Virgil Perkins. The road is leased to the New York & New England.

**Troy & Boston.**—At the annual meeting recently the following directors were elected: Daniel Robinson, Otis G. Carr, Samuel M. Vail, Samuel B. Sanford, Lyman Wilder, Henry E. Wood, William Knapp, William Gurley, William H. Doughty, Joseph H. Parsons, William H. Vanderbilt, Harrison Darke, George A. Parker.

**Vernon, Greensburg & Rushville.**—At the annual meeting in Indianapolis, Ind., Jan. 20, the following directors were elected: E. R. Forsythe, J. E. Robbins, W. W. Hamilton, Greensburg, Ind.; F. J. Hall, Rushville, Ind.; M. E. Ingalls, B. S. Cunningham, Cincinnati; Horace Scott, Louisville. The directors elected officers as follows: Horace Scott, President; C. Ewing, of Greensburg, Secretary; E. F. Osborn, of Cincinnati, Treasurer.

**Wabash, St. Louis & Pacific.**—Mr. Theodore Bergold is appointed Master Mechanic of the Middle Division of this road, with office at Springfield, Ill., to date from Jan. 20.

**Western Railway Association.**—This association has elected the following officers for the ensuing year: President, B. F. Ayer; General Counsel and Treasurer, George Payson; Secretary, C. R. Babaut; directors, B. F. Ayer, Illinois Central; B. C. Cook, Northwestern; A. L. Osborn, Michigan Central; H. B. Stone, Burlington; J. C. McMullin, Alton; F. A. Nims, Chicago & West Michigan; C. W. Rogers, St. Louis & San Francisco; Roswell Miller, Milwaukee & St. Paul; J. T. Odell, Northern Pacific; J. C. Newell, Lake Shore; J. C. Brown; T. F. Withrow, Rock Island; Executive Committee, B. F. Ayer, B. C. Cook, A. L. Osborn, John Newell, H. B. Stone, J. T. Odell and F. A. Nims.

## PERSONAL.

—Mr. W. R. Cuyok has resigned his position as Purchasing Agent of the Central Iowa road.

—Mr. Arthur Leary has retired from the position of Receiver of the New York City & Northern road.

—Mr. George C. Gillilan has resigned his position as Assistant General Passenger Agent of the Central Iowa road.

—Mr. Thomas A. Gorman has resigned his position as Assistant to the General Superintendent of the Canadian Pacific road.

—Mr. J. M. Ferris has resigned his position as General Superintendent of the New York, Pennsylvania & Ohio road.

—Mr. J. E. Samsel has resigned his position as Master Mechanic of the Pittsburgh Division of the Baltimore & Ohio road.

—Mr. A. V. H. Carpenter, General Passenger Agent of the Chicago, Milwaukee & St. Paul road, has been appointed a member of the Wisconsin Fish Commission by the governor of that state.

—Mr. William E. Cooper died at Galion, O., Jan. 24, aged 71 years, the cause of his death being general exhaustion. Mr. Cooper was for a number of years Master Mechanic of the Western Division of the Erie road, having charge of the Dunkirk shops, but retired some years ago.

—It is reported that Mr. C. E. Henderson, now General Manager of the Indiana, Bloomington & Western road, will resign that office to accept the position of General Manager of the Florida Railway & Navigation Co.

—Mr. David A. Freer, Traveling Agent of the West Shore Line, died at Syracuse, N. Y., Dec. 25 last, after many years' service in that position on various roads, including the Wabash, the Missouri, Kansas & Texas and the West Shore.

—Mr. Joseph H. Reynolds, who died in Camden, N. J., Jan. 19, aged 53 years, had been for eight years past General Agent of the West Jersey Express, and also General Baggage Agent of the West Jersey road. During the war he had for some time charge of the business of the Adams Express Co. with the Army of the Potomac, a difficult service, which he performed with credit to himself.

—Mr. Luther G. Tillotson, who died in New York Jan. 31, aged 51 years, at an early age engaged in the business of constructing telegraph lines with his father, who was one of the first contractors for such lines in this country. He was afterward for a time Superintendent of Telegraph on the Erie, and subsequently was Division Superintendent of the Western Union Co. In 1862 he began business in New York as a dealer in railroad and telegraph supplies, and shortly afterward founded the successful firm of L. G. Tillotson & Co., which is well known among all railroad and telegraph men.

—Mr. Theophilus E. Sicksles died in Philadelphia, Feb. 3, aged 63 years, after an illness resulting from inhaling the fumes produced by an explosion in one of the railroad tunnels whose construction he was superintending. He was a native of Pennsylvania, and for many years had spent his summers at his home in Kennett Square, in that state. The first railroad service which brought him into prominence was his building of the Hannibal & St. Joseph Railroad more than 30 years ago. He constructed the bridge of the Union Pacific Railroad from Omaha to Council Bluffs, the second structure of its kind (with tubular iron piers) completed in this country. He was connected with the Union Pacific Railroad as General Superintendent for several years after its completion, and up to the time of his death was its Consulting Engineer, holding close relations with President Sidney Dillon. Among other notable works with which Mr. Sicksles had connection, either as chief or consulting engineer, were the Boston Water Works, the Croton improvement, the enlargement of the Erie Canal and the building of the dry dock of the Brooklyn Navy Yard. Congress made him a member of the Commission which examined the mouths of the chief European rivers preliminary to the beginning of the work by Captain Eads upon the latter's system of jetties at the mouth of the Mississippi River. The work in which Mr. Sicksles was engaged at the time of his death was the building of a bridge across the Arkansas River, at Little Rock. Mr. Sicksles leaves one married daughter. His wife, who died several years ago, was a cousin of Bayard Taylor. The funeral will take place Feb. 7 at Kennett Square.

—A dispatch from Milwaukee, Feb. 5, says: "At a late hour last evening S. S. Merrill, General Manager of the Chicago, Milwaukee & St. Paul Railroad, who had been confined to his house for many months from partial paralysis, suffered a third stroke, and has been in an unconscious condition ever since. At noon it was thought life was extinct, and a telephone message from his home in the suburbs announced that the end was at hand. A little later the dying man rallied somewhat, but quickly sank into a stupor from which he has not since rallied. The reported death of this venerable and popular railroad man was received with most profound sorrow. Alexander Mitchell, who has been Mr. Merrill's life-long friend and associate, is utterly prostrated and is lying very ill at his home. It is believed that Mr. Merrill cannot survive the night."

"Sherburne S. Merrill was born in Alexandria, Grafton County, N. H., Feb. 28, 1818. He lived on a farm and received such education as the public schools afforded him until he was 16 years old, when he began life for himself. One year as a servant about a hotel, six years in the employ of a Boston furnishing house, and then, in 1850, Mr. Merrill was found first in Milwaukee, engaging as boss of a crew grading a section of what is now the Prairie du Chien Division of the St. Paul system; next a train conductor, then Paymaster, then Assistant Superintendent of the Milwaukee & Watertown line, then of the La Crosse & Milwaukee, then of the old Winona & St. Peter, until, in 1865, he was chosen for the duties of his present position as General Manager of the Milwaukee & St. Paul, which position he has held through all the progress in the growth of that company. Mr. Merrill's family consists of a wife, three married daughters, and a son. He is very wealthy, and his estate is worth from \$1,000,000 to \$2,000,000."

## TRAFFIC AND EARNINGS.

### Cotton.

Cotton movement for the five months of the crop year from Sept. 1 to Jan. 30 is reported by the *Commercial and Financial Chronicle* as follows, in bales:

Interior markets:	1884-85.	1883-84.	Inc. or Dec.	P. c.
Receipts.....	2,296,049	2,354,436	D. 58,387	2.5
Shipments.....	2,026,392	2,103,838	D. 77,446	3.4
Stock, Jan. 30.....	280,872	299,754	D. 18,882	6.3

Seaports:	1884-85.	1883-84.	Inc. or Dec.	P. c.
Receipts.....	4,126,992	3,981,316	I 145,676	3.7
Exports.....	2,813,441	2,531,494	I 277,947	10.9
Stock, Jan. 30.....	885,457	1,060,563	D. 175,106	16.5

Exports include only shipments to foreign countries, and do not include the movement to other ports in the United States. A large part of the receipts at interior markets appears again in the receipts at the seaports.

The *Chronicle* says: "In the table below we give the receipts from plantations, and add to them the net overland movement to Jan. 1, and also the takings by Southern spinners to the same date, so as to give substantially the amount of cotton now in sight."

Receipts at the ports	1884-85.	1883-84.	1882-83.	1881-82.
To Jan. 30.....	4,126,992	3,981,316	4,319,947	3,787,538
Interior stocks on Jan. 30 in excess of Sept. 1.....	263,057	250,598	311,038	314,504

Total receipts from plantations.....	4,390,049	4,231,914	4,650,985	4,132,137
Net overland to Jan. 1.....	358,048	382,415	413,082	323,510
Southern consumption to Jan. 1.....	115,000	121,000	130,000	100,000

To't in sight Jan. 30	4,683,097	4,737,329	5,194,067	4,555,642
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Northern spinners' takings to Jan. 30.....	589,880	975,791	1,085,631	1,102,879
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"It will be seen by the above that the increase in amount in sight Jan. 30, as compared with last year, is 126,368 bales, the decrease from 1882-83 is 330,370 bales, and the increase over 1881-82 is 308,055 bales."

### Railroad Earnings.

Earnings of railroad lines for various periods are reported as follows:

Month of January:	1885.	1884.	Inc. or Dec.	P. c.
Canadian Pacific.....	\$392,000	\$261,000	I \$131,000	50.2
Chi. & Alton.....	644,365	636,639	D. 7,726	3.6
Col. Mil. & St. P.....	1,548,000	1,467,069	I 80,931	5.5
Long Island.....	150,435	135,612	I 14,823	10.9
Mil., L. S. & W.....	72,505	69,705	I 2,800	4.0
St. L. & San F.....	315,800	319,900	D. 4,100	1.3

Third week in January:	1885.	1884.	Inc. or Dec.	P. c.
Bur., C. R. & No.....	\$4,496	\$53,970	D. \$10,404	19.3
Ches. & Ohio.....	193,716	188,970	I 4,746	2.5
Clu., I., et. L. &.....				
Chi.....	43,405	38,676	I 4,729	12.1
Denver & R. G.....	86,709	94,797	D. 8,088	8.5
Illinois Central.....	236,500	210,224	D. 26,276	12.5
Iowa lines.....	23,000	33,717	D. 10,717	31.5
Lake Erie & W.....	20,567	20,680	I 1,000	28.1
St. P. & Duluth.....	16,450	15,858	I 592	3.5

Year ending Dec. 31:	1885.	1884.	Inc. or Dec.	P. c.
Norfolk & West.....	\$2,711,104	\$2,812,777	D. \$101,673	4.0
Net earnings.....	1,194,246	1,303,203	D. 108,957	8.0
West Jersey.....	1,319,648	1,227,654	I 91,994	7.5
Net earnings.....	503,335	441,897	I 61,438	13.5

Even months ending Nov. 30:	1885.	1884.	Inc. or Dec.	P. c.
Gal., Har. & San.....	\$2,610,439	\$3,276,880	D. \$666,441	20.1
Ant.....	773,342	1,332,637	D. 559,295	37.2
Louisiana West.....	424,716	547,093	D. 122,377	29.6
Net earnings.....	184,778	235,554	D. 50,776	21.8
Tex. & N. Orlans.....	776,389	1,070,934	D. 294,545	27.4
Net earnings.....	291,831	560,063	D. 268,232	47.4

Month of November:	1885.	1884.	Inc. or Dec.	P. c.
Chi. & East, Ill.....	\$135,400	\$140,907	D. \$5,507	9.7
Net earnings.....	66,768	80,735	D. 13,967	17.3
Gal., H. & San.....				
Ant.....	209,170	278,761	I 69,591	7.3
Net earnings.....	150,372	87,596	I 62,776	71.5
Louisiana West.....	34,325	5,775	I 28,550	2.2
Net earnings.....	32,112	26,617	I 5,495	20.4
Tex. & N. Orlans.....	8,457	108,192	D. 99,735	23.0
Net earnings.....	41,674	54,099	D. 12,425	23.0

Month of December:	1885.	1884.	Inc. or Dec.	P. c.
N. Y., Ont. & W.....	\$130,600	\$117,909	I 12,691	10.8
Norfolk & West.....	247,055	232,853	I 14,202	6.0
Net earnings.....	115,567	86,080	I 29,487	34.0
Phila. & Reading.....	2,315,563	2,297,643	I 17,920	6.8
Net earnings.....	221,011	85,557	I 135,454	4.0
West Jersey.....	83,130	75,460	I 7,664	10.1
Net earnings.....	2,847	13,054	D. 10,207	78.8

\* Deficit.  
Weekly earnings are usually estimated in part, and are subject to correction by later statements.

### Petroleum.

The production of the Pennsylvania and New York oil wells for December is given by *Stonell's Petroleum Reporter* as follows, in barrels of 42 gallons:

	1884.	1883.	Inc. or Dec.	P. c.
Production.....	1,822,614	1,988,326	D. 165,712	8.3
Shipments.....	2,382,244	1,749,547	I 632,697	36.2
Stock, Dec. 31.....	37,366,126	35,745,632	I 1,620,494	4.5
Producing wells.....	21,909	20,606	I 1,303	6.2

Of the total production the Allegheny District in New York furnished 12.8 per cent.; the Bradford District in Pennsylvania, 47.9; the Warren District, 10.0, and the Lower District, 29.3 per cent. The total production was the smallest reported in any month for four years past.

Shipments are the largest ever reported in one month, with two exceptions—July, 1882, and October, 1884.

The stock on hand was diminished during December by 559,630 barrels, which was the excess of shipments over production.

During the month 66 new wells were completed, making a total of 2,247 opened during the year. There were 11 dry holes reported. At the close of the month 78 new wells were under the drill and 48 drilling rigs in preparation.

Shipments of oil for the month were:

	Crude.	Refined.	Total.	Per c.
New York.....	640,420	7,973	648,393	27.2
Philadelphia.....	467,083	22,069	489,152	20.6
Baltimore.....	247,028	2,468	249,496	10.5
Boston.....	22,355	99,567	121,922	5.1
Cleveland.....	311,411		311,411	13.0
Pittsburgh.....	114,040		114,040	4.8
Local points.....	356,984	89,930	446,914	18.8
Refined at Creek refineries.....	222,617		222,617	9.2
Total.....	2,382,244	221,017	2,603,261	100.0

In this table the refined oil is that refined at Creek refineries and thence shipped to the points named; the refined is reduced to its equivalent in crude, so that the total represents the amount of crude oil finally reaching each place, whether in crude or in refined form.

### Coal.

Coal tonnages for the week ending Jan. 24 are reported as follows:

	1885.	1884.	Inc. or Dec.	P. c.
Anthracite.....	306,426	425,651	D. 119,225	28.0
Eastern bituminous.....	137,117	162,142	D. 25,025	15.4
Coke.....	37,203	53,446	D. 16,243	30.4

The anthracite trade is unsettled by reports of war among the companies. It seems to be pretty well settled, however, that they will adhere to the agreement for the present, and that the Pennsylvania Railroad Co. will continue on its own course without regard to the others. Prices will certainly be lower than last year.

St. Louis coal receipts for the year ending Dec. 31 are given as follows, in bushels:

Route.	1884.	1883.
Ohio & Mississippi.....	3,815,875	4,437,075
Chicago & Alton.....	702,774	1,38,525
Indianapolis & St. Louis.....	4,140,800	3,538,509
St. Louis & Iron Mountain.....	136,800	104,075
St. Louis, Vandalia & T. H.....	9,282,875	8,891,525
Caro Short Line.....	9,239,375	9,109,526
Wabash.....	11,088,500	9,145,325
Louisville & Nashville.....	6,065,425	5,817,850
Illinois & St. Louis.....	5,592,850	5,785,475
St. Louis & Cairo.....	763,325	3,278,925
Toledo, Cincinnati & St. Louis.....		21,200
Missouri Pacific.....	9,625	
From Ohio River.....	1,752,075	1,857,600
From Grand Tower by river.....		112,025
From St. Louis city and county, estimated.....	250,000	450,000
Total bushels.....	52,249,600	50,687,225

The increase last year was 1,662,375 bushels, or 3.3 per cent. The receipts last year amounted to about 2,093,984 tons, the larger part of it coming from within 25 miles of the city.

The coal tonnage of the Pennsylvania Railroad for the week ending Jan. 24 was:

	Coal.	Coke.	Total.	1884.
Line of road.....	121,315	35,379	156,694	182,748
From other lines.....	50,132	1,824	51,956	52,003
Total.....	171,447	37,203	208,650	234,751
Year to Jan. 24.....	718,289	159,330	877,619	861,4



year there were 741 coal mines open, including numerous small local enterprises. These mines employed 25,575 men, and the total output was 10,101,005 tons, the average value of which at the mine was \$1.30 per ton.

The Philadelphia Ledger says: "The Pennsylvania and the Baltimore & Ohio roads have concluded the details for the pooling of the tidewater bituminous coal tonnage for the season of 1885. The former is to control 55 per cent. of the total, and the latter 45 per cent. The interests of the Lehigh Valley, the Beech Creek & Clearfield, the Chesapeake & Ohio and the Norfolk & Western railroads have been considered in the arrangement. The parties to the pool agree to base their charges for carrying on the selling prices at Baltimore, Philadelphia, New York and Sound ports, the selling prices at the several places being respectively as follows: \$2.70, \$2.80, \$3.25 and \$3.50. The pool goes into operation on March 1. The rates established are about 75 cents per ton less than at the beginning of the 1884 season."

Actual tonnage passing over the Huntingdon & Broad Top road for the month of January was:

	1884.	1881.	Decrease.	P. c.
Broad Top coal .....	12,571	18,146	5,565	30.9
Cumberland coal .....	12,409	24,335	11,926	47.5
Total .....	24,980	41,471	16,491	39.8

Cumberland coal shipments for the month of January are reported by the Cumberland Citizen as follows:

	1885.	1884.	Inc. or Dec.	P. c.
Balt. & Ohio R. R. ....	138,303	120,813	17,490	9.0
Pennsylvania R. R. ....	11,302	31,469	20,167	47.7
Total .....	149,605	152,282	2,677	1.8

Local shipments are included in the Baltimore & Ohio tonnage. This coal was shipped from the mines as follows: Cumberland & Pennsylvania, 102,382; George's Creek & Cumberland, 12,293; West Virginia Central & Pittsburgh, 34,798; delivered direct to Baltimore & Ohio, 32; total, 149,505 tons.

The coal tonnage of the Chesapeake & Ohio Railroad for the year ending Dec. 31 was:

	1884.	1883.	Decrease.	P. c.
Coal .....	885,395	943,313	57,918	1.9
Coke .....	81,515	100,746	19,231	19.1
Total .....	966,910	1,044,059	77,149	3.7

The decrease was in gas and steam coals, the block and camel coals showing a gain.

#### Stop-overs on California Emigrant Tickets.

Emigrant passengers to California by the Central and Southern Pacific, and any of their connecting lines, will hereafter be allowed the privilege of stopping off at any points on the line in the state of California that they may have an opportunity to see the country, examine lands offered for sale, and satisfy themselves as to the inducements for location at points short of destination of their through tickets. That they may have ample time in which to do this, the limit of their through tickets will be extended not exceeding 10 days. Baggage on third-class or emigrant tickets will be checked to destination of ticket only, as heretofore. But should passengers decide to locate at stations at which they have stopped, agents will have their baggage returned free of charge from the point to which it has been checked.

#### Pittsburgh Freight Rates.

A general reduction in freight rates from Pittsburgh to western cities was made Feb. 1, varying from 10 per cent. upwards. From Pittsburgh to Chicago the reduction is: 1st class, from 50 to 40; 2d, from 40 to 30; 3d, from 30 to 20; 4th, from 20 to 17½; 5th, from 15 to 12½, and 6th, from 13 to 10 cents. The reduction was made in the first place by the Pittsburgh & Lake Erie, and the other roads followed suit. The Pittsburgh people have been for some time past complaining that their west-bound rates were too high, preventing them from securing their fair share of western business.

#### East-bound Freight Rates.

At the meeting of the Indianapolis East-bound Pool, held Jan. 29, the roads represented decided to restore rates at once to the tariff, which has not been maintained for some time.

#### Southern Passenger Rates.

The war on passenger rates between the Memphis & Charleston and the Nashville, Chattanooga & St. Louis roads, in which the rate from Memphis to Chattanooga was cut down to 82, is at an end, having lasted but little over a week. The difficulty was amicably adjusted at a meeting of representatives of the two roads, held at Chattanooga Jan. 30.

The Savannah, Florida & Western road announces that it will sell excursion tickets from all points on its line to New Orleans at a uniform rate of 1 cent per mile for the round trip. This will make the cost of an excursion ticket from Savannah to New Orleans \$13.

#### Passenger Rates.

On Jan. 30 the Pennsylvania, the Lake Shore and the Michigan Central reduced their rates from Chicago to New York to \$12 first-class, and \$9 second-class; and to Boston to \$14 first-class, and \$10 second-class. This is a general reduction of 2¢ from the rates which have been prevailing for some time, and it is understood that these roads will continue to meet any reduction made by other lines on east-bound passenger rates.

#### Colorado-Utah Association.

At a meeting of the companies in this association, held in Chicago, Jan. 31, it was decided to continue the pool on the Colorado and Utah business until May 1, next, 30 days' notice being given by any company desiring to withdraw. The rules heretofore governing the pool are to remain in force, but new divisions are to be made. Messrs. Bogue and Midgley, of Chicago, and Frink, of St. Louis, being named as arbitrators.

#### Chicago East-bound Freight Pool.

It is announced that the Chicago & Grand Trunk road has given 60 days' notice of withdrawal from the east-bound freight pool from Chicago. The withdrawal will take effect April 1. The officers of the company state that the reason for this action is that the road has not received its just proportion of business in the pool, and they think that its interests can best be protected by leaving it. They state that there is no intention of cutting rates or taking other violent action.

#### Southwestern Railway Association.

A called meeting of this association began in Chicago, Jan. 29, all the roads being represented. The committee appointed some time ago to consider the proposed plan for reorganizing the association presented its report, and the first day was spent in general discussion of this report.

On the following day the questions in dispute were amicably settled. They related chiefly to the division of territory and the pooling of certain local business. It was agreed to pool all business to and from junction points on the St. Louis, Fort Scott & Wichita road, and also all live stock and grain from the Omaha Branch of the Missouri Pacific south of Falls City, Neb. The compensation to be allowed the Missouri Pacific for pooling this traffic will be settled by the Commissioner, or by arbitration in case the company objects to his award. Compensation to be allowed to Chicago, Burlington & Quincy

for pooling the business from its Nebraska lines is also to be settled by the Commissioner or by arbitration. The association and the present divisions are to continue to Dec. 31 next, no road to be allowed to withdraw except on 30 days' notice; and 30 days' notice must also be given of any demand for change in the division.

#### Sault Ste. Marie Canal.

The number of vessels passing through the Sault Ste. Marie Canal last year was as follows:

	1884.	1883.	Increase.	P. c.
No. of vessels .....	5,687	4,315	1,372	32
Tons freight carried .....	2,874,557	2,677,105	197,452	27
No. of passengers .....	54,214	30,100	24,114	30

Canal opened April 23 and closed Dec. 10, 1884, being open to navigation 232 days.

Canal was open during season of 1883 224 days.

#### RAILROAD LAW.

##### Claims Accruing Before a Receiver's Appointment.

In the case of Merriwether & Co., against the St. Louis, Hannibal & Keokuk Co., and others, the plaintiffs brought an intervening petition for an order directing the Receiver of the road to pay for lumber furnished under a contract made before his appointment. The United States Circuit Court confirmed the report of the Master, recommending the payment of the bill, although the original contract was made before the time specified for the payment of supply bills by the Receiver. The Court held that it had a right to order payment for supplies necessary for the operation and maintenance of the road whether such supplies were furnished before or after the appointment of a receiver. At the same time, it also had a right to fix a limit of time in order to prevent the indefinite extension of such claims. If the mortgagee chose to permit the corporation to operate the road, he must be considered as estopped from disputing that such operation was for his benefit, and to be accounted for in a final adjustment. In this case it appears that long subsequent to the default and continuously thereafter down to the intervention of the mortgagee for the appointment of a receiver, the demand in question was progressing for the betterments of the road without objection from any one. Ordinarily, demands as to items accruing prior to the time limited (as in this case for six months) would be excluded as heretofore stated. But here the contract was incomplete until the appointment of a receiver, and consequently must be treated as falling within the equitable rule.

#### OLD AND NEW ROADS.

**Augusta, Gibson & Sandersville.**—The track on this road is now laid from Augusta, Ga., southwest 10 miles. A large part of the grading is completed on 40 miles of the road. The director is Mr. H. A. Twigg, of Augusta.

**Baltimore & Ohio.**—A suit has been begun in the United States Circuit Court in Baltimore by Wm. O. Rose, a stockholder, whose bill charges that the affairs of the company are mixed up unwarrantably with those of other corporations, to the detriment of stockholders, and asks that the company be required to state definitely its relations to the Baltimore & Ohio Telegraph Co. Officers of the company say that they are ready to answer all questions that the Court may direct.

**Beach Creek, Clearfield & Southwestern.**—Regular passenger trains on this road have begun running to Philadelphia, Pa., 70 miles from the junction with the Pine Creek Railroad at Jersey Shore. The track was laid to this point about the close of last year.

**Boston & Lowell.**—In Boston, Feb. 3, a hearing was begun before the Railroad Committee of the Massachusetts Legislature on the bill to confirm the leases of the New Hampshire roads. Counsel for the company stated briefly the objects of the bill. The only party appearing in opposition was Col. John H. George, formerly counsel for the company, who made a long speech which was an elaborate attack on the present management. Without making any specific charges he claimed that an investigation was needed. The officers of the company stated their readiness to answer any questions or give any information the Committee might desire. It is charged that Col. George's attack is mainly inspired by personal motives.

**Brooklyn, Bath & Coney Island.**—A receiver has been appointed for this road under proceedings begun for the foreclosure of the first mortgage. The road extends from Brooklyn to Coney Island, and has a funded debt of \$85,000. It was the first steam railroad built to Coney Island, and was for some time very profitable, but its business has been almost entirely lost on account of the multiplication of railroads to the island and a consequent division of the business.

**Buffalo, New York & Philadelphia.**—It is reported that about 80 per cent. of the stock and bonds of this company have been assented to the proposed plan for the settlement of the company's difficulties. The time for receiving assents has been extended to March 1, and the time for payment of subscriptions to May 1, next.

**Central Massachusetts.**—The Boston Herald says: "The report of developments soon to be made regarding this property does not, so far as can be learned, rest upon a substantial basis, and, unless the financial situation should improve, it would not be surprising if the season of 1885 passed without a fresh shovel of earth being added to the unfinished roadbed. All negotiations for a lease of the property to one of the northern roads are off."

**Central, of New Jersey.**—As noted elsewhere, the February coupons on the first-mortgage bonds of this company were not paid by the Reading Receivers. An offer to purchase the coupons was made, the house of Barker & Co., of Philadelphia, being the purchasers named. It is understood, however, that a large part of the bondholders objected to this proceeding, and it is said that the coupons on less than 1,500 out of the 5,000 bonds were sold. The holders of the remainder will probably take action shortly, and a number of them have formally protested their coupons with a view to legal action in the future. The Central's first mortgage is, or should be, an excellent security, as its amount is only \$5,000,000, which is very much less than the real value of the property which it covers, and it is a prior lien upon the road.

It is again reported that the Baltimore & Ohio road has been a large buyer of the stock of the company, with a view of securing a controlling interest. And it is said that in case the lease of the road to the Reading is broken, as now appears probable, the Baltimore & Ohio will make an offer to lease the road.

**Chicago, Burlington & Quincy.**—This company has begun work on 17 miles of new road between Pacific Junction, Ia., and Council Bluffs. The new road lies back from the river, and is built to avoid trouble heretofore experienced every year from high water. When it is completed, the old road or outside track will be taken up.

**Chicago & Eastern Illinois.**—The financial exhibit of this company for the six months ended Dec. 31, 1884, is as

follows, the figures being actual, except the December operating expenses, which are partially, but closely, estimated:

Gross earnings .....	\$357,659
Operating expenses, December estimated .....	41,104
Total .....	\$406,552
Less interest charges .....	257,253
Surplus .....	\$149,299

Expenditures for construction and equipment were \$109,822. During the half-year the floating debt was reduced from \$714,151 to \$581,144, and the car-trust bonds from \$344,000 to \$298,000. The current accounts and balances due were about \$45,000 less on Jan. 1 than on July 1, and \$47,500 had been paid for new steel rails on hand but not yet used.

The equipment has been increased by the purchase of 100 refrigerator cars, 50 of which have been delivered, and the remaining 50 will be delivered in February. There has been expended, since the reorganization of the company, in equipment and improving the property, \$1,847,935. Sales of first consolidated mortgage gold bonds, which were issued for the purpose of funding the floating indebtedness, have been made to an extent sufficient, with the surplus earnings for the six months, to make the reductions in the debt about \$298,000 as shown above.

**Chicago, Rock Island & Pacific.**—This company will shortly begin work on an extension of its Winteret Branch from Winteret, Ia., southward to a connection with the Southwestern Division. This extension will make a direct line from Des Moines to Kansas City.

**Chicago & West Michigan.**—This company last year completed two short branches for local business. The Troy Branch extends from West Troy Junction, Mich., to Troy, 2 miles, and the Lilley Branch from Lilley Junction to Sisson's Mills, two miles. The last-named branch will be extended further this year.

**Cincinnati, Columbus & Hocking Valley.**—Notice is given that trains ceased to run over this road on Jan. 26, and the road will be abandoned until further notice. It is a short line running from Claysville Junction, O., to Jeffersonville, 28 miles, and has been in the hands of a receiver for some time.

**Connecticut Central.**—A Hartford despatch says that application was made to the State Treasurer Feb. 3 to foreclose the mortgage on this road. The road runs from East Hartford to the Massachusetts line, and is part of the New York & New England system, forming its Springfield Branch. It is leased and operated by the New York & New England road. The mortgage is for \$325,000, no interest having been paid since April, 1879. The bonds are held chiefly by the New England road.

**Dayton & Ironton.**—The bondholders' committee having charge of the organization of this company announces that the preferred stock is now ready for delivery at the office in Boston, in exchange for the certificates of deposit of first-mortgage bonds of the Toledo, Cincinnati & St. Louis, South-eastern Division, and common stock is also ready for delivery in exchange for the old income bonds on payment of the agreed assessment upon these bonds.

**Delaware & Hudson Canal Co.**—This company has lately completed a very handsome passenger station in Utica, N. Y., for the leased Utica, Clinton & Binghamton line, which is thus described by the Utica Herald:

"The building is in the Queen Anne style of architecture. It is of ordinary brick laid in red mortar, and has brown-stone trimmings. In height it is two stories and attic. The principal waiting room has two large entrances from Genesee street. The room is a large one and well lighted. In one end the ticket office is partitioned off. Under the stairway leading to the second story is a news and book stand. Just beyond the ticket office is a passageway, and a wide door leading to the depot yard. Just beyond this passageway is the ladies' waiting room, adjoining which is a toilet room and water-closet. Still further in the rear is the baggage room, which has wide entrances from Water and Division streets, and a wide baggage window in the rear, where baggage can be unloaded direct into the room. On the Division street side is an ample shed under which baggage and passengers will have protection from the weather. There is also a shed along the railroad front for the benefit of passengers. These sheds are ornamental in design and coloring. The floors are of Georgia pine and the interior is well lighted. The side walls and ceilings are ceiled with 2-in. strips of spruce finished in the wood. The outer doors are of hand-somely grained quartered oak, and the door and window trimmings and gas fixtures are of brass. Over each inside door is a large transom, supplied with a transom lifter. The seats in the waiting rooms are of perforated woodwork, and comfortable and cleanly. The entire interior is neat, attractive and cheerful, the abundance of light and the bright appearance of the woodwork adding much to the effect.

On the second floor the room facing Genesee street is the Superintendent's office, at the side of which is a private office. Next in rear, and communicating with the Superintendent's office by a small window, is the conductors' room, supplied with large ash desks, and five closets for uniforms. Again in rear of this, and connected by a similar window, is the office of Train Dispatcher Dowd. In this office, as also in the Superintendent's office and the ticket office on the first floor, there is a bay projection commanding a view of the Central depot yard, many miles of the Mohawk Valley, the Deerfield hills, and the Central, Black River, and Southern railroad tracks for quite a distance north and west. The view is a fine one, and all trains arriving or departing on all the roads in Utica, except the West Shore, are easily seen. The rooms on the second floor have a wainscoting of pine instead of the ceiling on the first floor. Suitable sinks, storage rooms, etc., are provided for, and in all respects the building is very convenient. The rooms are high between floors, the first story being 16 and the second 15 ft. high."

**Delaware, Lackawanna & Western.**—At a meeting of the board of directors of this company, Jan. 30, a statement for the year ending Dec. 31 was submitted as follows:

	1884.	1883.	Inc. or Dec.	P. c.
Gross earnings .....	\$31,311,092	\$31,119,605	\$1,991,487	4.6
Operating exps. ....	23,008,145	23,003,018	5,127	0.4
Net earnings .....	\$8,302,947	\$8,116,587	\$1,886,360	14.6
Interest and rents .....	5,113,322	4,946,943	166,379	3.4
Balance .....	\$3,189,623	\$4,779,613	\$1,589,990	33.2
Betterments .....	385,032	1,722,816	\$1,337,784	61.1
Dividends .....	\$2,805,490	\$1,708,797	\$1,096,693	24.3
Surplus .....	\$700,400	\$1,610,797	\$910,397	55.9

The balance left for the stock after deducting fixed charges and betterments was equal to 10.7 per cent. on the stock last year, and 14.2 per cent. in 1883.

The Buffalo Extension (New York, Lackawanna & Western) earned last year, it is stated, \$258,000 over the interest on its bonds and dividends on its stock paid as rental.

**Eastern Michigan.**—This company has been incorporated to build a narrow-gauge road from Marine City,



Mich., on the St. Clair River, southwest to Detroit, about 50 miles. The proposed line follows closely the shore of the St. Clair River and Lake.

**East Tennessee, Virginia & Georgia.**—The Western & Atlantic Co. has refused to receive from this road freight to be delivered in Atlanta, or to allow the company the use of its siding for the delivery of freight in that city. The reason given is that, since the East Tennessee road was completed to Atlanta, it has refused to deliver East Tennessee coal to the Western & Atlantic at Dalton, while at the same time it has made use of tracks of that company in Atlanta to deliver coal to customers who cannot be reached by its own tracks, and it is to put a stop to this that the Western & Atlantic has taken this action.

It is said that the Georgia creditors will make another effort to secure the appointment of a separate receiver for the road in that state, and that for that purpose a new application will be made to the Georgia State Court.

**Florida Southern.**—This company has bought the St. Johns, Lake Eustis & Gulf road, extending from Fort Mason, Fla., to Astor, 36 miles, and will hereafter operate it as the St. Johns & Lake Eustis Division of its road. It has at present no connection with the main line except by steamboat, but a rail connection will be made by the extension from Leesburg to Fort Mason, now building.

**Fort Worth & Denver City.**—Work is now actively in progress on the grading of the extension of this road from Wichita Falls, Tex., and work has also been begun on the bridge over the Wichita River.

**Georgia Pacific.**—The Second Division of this road is now completed to Day's Gap, Ala., 5 miles eastward from the late terminus at Patton Mine, and 77 miles from the western end of the division at Columbus, Miss. Trains run to the new terminus.

**Green Bay, Winona & St. Paul.**—This company defaulted on the February coupons of its first-mortgage bonds. The amount of these bonds outstanding is \$1,600,000. The earnings of the road are very light, and it has shown every year a deficit in earning fixed charges. The road was formerly the Green Bay & Minnesota, but was sold some years ago under foreclosure, and reorganized under the present name. Besides the first-mortgage bonds there are about \$3,800,000 second-mortgage income bonds, on which no interest has ever been paid. The road is chiefly owned by Mr. John I. Blair, who is understood to be a large holder of the bonds as well as the stock.

**Hannibal & St. Joseph.**—This company receives bids this week for \$3,000,000 of its 6 per cent. consolidated mortgage bonds, which are to be used to retire the convertible bonds which will mature in March. Payments are to be made in cash or in 8 per cent. convertible bonds.

**Indiana & Illinois Southern.**—Trains are now run upon this road over the 23 miles of track from Effingham, Ill., to Newton, and on 31 miles from Switz City, Ind., to Merom, the intermediate section of 35 miles from Newton to Merom being still without train service, and will probably continue so for some time. It is said that an effort will be made to raise \$300,000 to put the road in good running order and to change it from 3 ft. to standard gauge.

**Kansas City, Wichita & Indian Territory.**—This company has been incorporated to build a railroad from Kansas City, Mo., to Wichita, Kan., and thence through the Indian Territory to Fort Smith, Ark. About 500 miles of road are projected.

**Michigan Central.**—A new branch of the Canada Southern division of this road has been opened for traffic, extending from Oil City, Ont., to Oil Springs, a distance of 2½ miles.

**Minnesota Railroad Law.**—The Railroad Committee of the Minnesota Legislature has reported a bill providing for a board of three commissioners who will take the place of the present Railroad Commissioner of the state, and will be known as the Board of Railroad and Warehouse Commissioners. They are to have substantially the same power as the Illinois commission over the railroads of the state, and like the Illinois commission are to have certain powers of regulation over grain elevators and public warehouses. The bill also contains sections directed against discrimination in rates. It provides that all roads must receive passengers and freight from any connecting line at a point of junction and provide the necessary transportation for them. It also contains what has come to be generally known as the "short-haul clause," that is, providing that no charge shall be made for transportation of freight any distance on a railroad which is greater than the amount charged for carrying freight of the same class a longer distance. The bill is very elaborate, but will probably bring out a great deal of discussion and will be considerably amended before it is passed.

**Missouri Pacific.**—The \$700,000 St. Louis County loan, on which this company pays interest, and which matures shortly, has been extended for a long term of years at 4 per cent. interest. Heretofore 7 per cent. has been paid.

**Neillsville & Lake Superior.**—This company has been organized to build a line from Neillsville, Wis., northward to a point on the Wisconsin Central, near Thorp, a distance of 45 miles. The incorporators are all residents of towns along the line.

**New York, Lake Erie & Western.**—The directors of the Buffalo & Southwestern Co. have brought suit against this company to recover \$945,000 defaulted interest due Jan. 1 last. The company complains that the Erie is insolvent, asks that it be restrained from using the gross receipts of the leased road until the default is made good.

**New York & New England.**—The exact terms of the proposition for the adjustment of the claim of the New England Car Trust against this company, as finally accepted, were as below:

"First. The Car Trust Association to be dissolved and merged into the New York & New England Railroad Co.

"Second. The railroad company to issue in place of the \$1,241,000 car trust certificates now outstanding, second mortgage bonds, payable Aug. 1, 1902, to the same amount, and bearing interest from Feb. 1, 1895, at the rate of 3 per cent. per annum for five years, then 5 per cent. per annum for the next two years, and 6 per cent. for the remaining period.

"Third. The railroad company to pay in cash, in lieu of all claims on the Receiver, the overdue interest to Feb. 1, 1895, on the outstanding car trust certificates at the time of the exchange, the said payment amounting to \$50 on each certificate.

"Fourth. In addition, the railroad company will also settle any small bills which may be outstanding that belonged to the trust."

The managers of the car trust have issued a circular to the certificate-holders recommending them to deposit their certificates, in accordance with the above plan, with the American Loan & Trust Co., and receive in exchange the second mortgage bonds of the railroad company, which are already signed and ready for delivery.

**New York, West Shore & Buffalo.**—In answer to charges widely circulated that this road is in bad condition, officers of the company quote the following statement in the annual report of the Railroad Commissioners:

"The promoters of the (West Shore) enterprise intended that the road, in its physical aspects, should be first-class in every respect. No railroad in the country has higher, and few as high standards of road-bed and equipment. The road-bed is of ample width, being 28 ft. from crest to crest of slope at sub grade, and 13 ft. from centre to centre of tracks. The grades are very light, a large proportion of the road being practically level. The maximum grade going east is 20 ft. to the mile. The maximum grade going west is 30 ft. to the mile. The rail is steel, 67 lbs. to the yard; angle plates joining rails are 3 ft. long; a tie is under the joint and on each side, so that the angle bars rest on the ties. It gives great solidity to the joints and uniformity of motion on the track. The switches on the main tracks are all of the Wharton pattern. The bridges are iron structures, on massive masonry abutments, built in accordance with the best standards of construction. The care with which the bridges are maintained is highly commendable."

**Northern Pacific.**—This company is making progress with its work on the Cascade Branch on each side of the mountains. Track is now laid from Pasco Junction, Wash. Ter., 88 miles to a point three miles beyond Yakima City. Grading is going on 40 miles further to Ellensburg. On the west side of the mountains track is laid 26 miles from Tacoma and grading is in progress 24 miles further.

**Norwich & Worcester.**—This road is now operated by the New York & New England Co., the rental being interest on the debt and 10 per cent. on the stock. The lessee wants to secure a reduction to 7 or 8 per cent. on the stock, and it is said that there is a prospect that this reduction will be accepted. On the other hand it is reported that if the stockholders refuse and the lease is canceled, the Boston & Albany Co. is willing to lease the road, in order to secure a line to Long Island Sound. In 1883 the net earnings of the road were \$38,860 less than the rental, but in 1892 there was a surplus of \$38,879.

**Ohio River.**—The extension of this road from its present terminus at Parkersburg W. Va., to a connection with the Ohio Central at Point Pleasant, has, it is understood, been abandoned for the present, or at any rate until financial matters assume a more favorable aspect, as it is difficult at present to raise the money for the road.

**Old Colony.**—This company will begin, as soon as the weather permits, an extension of its second track from Braintree, Mass., to South Abington, 10½ miles.

**Philadelphia & Reading.**—The new plan of reorganization has been sent out in pamphlet form to holders of securities, with the necessary blanks on which their assent to the plan is to be given. President Keim announces that security holders are requested to signify their acceptance of the plan prior to March 31, next, and that negotiations for the changes proposed in the leases of the Central Railroad Co. of New Jersey and the Schuylkill Navigation Co. will be opened directly with those companies, who will be expected to communicate with their own shareholders. Upon the full acceptance of the plan the managers will make all necessary arrangements to carry the same into immediate operation, but acceptances by the creditors will not be considered binding upon them until the public announce by the managers that sufficient acceptances have been received to carry the plan of reorganization into effect.

Still another suit was begun in the United States Circuit Court in Philadelphia, Jan. 30. This suit is brought by a holder of the income bonds, and is intended to enforce the rights of the holders of that class of securities.

On the same day, an order directed to the Receivers was issued, which is of considerable importance. The Court orders "that the Receivers pay out no money without a special order of the Court providing for the same, except to defray the running expenses of the road under their charge, including the wages and salaries of all persons immediately connected with that service—embracing civil engineers—to keep the property of the railroad company, tracks, buildings, etc., in proper repair, and to defray the expenses of operating the mines and other works and transacting the business generally of the coal and iron company, and repairing and preserving the property of said company."

Under this order, apparently, payments on the New Jersey Central rental will have to cease, and the Receivers cannot provide for the interest on that company's bonds. An offer to buy the coupons was made by Barker & Co., of Philadelphia, but not generally accepted. It is understood that the Central Co. is already preparing to take action, and that the December dividends being now two months in arrears, a formal demand for payment will shortly be made, and if the payment is not met, proceedings will be begun at once to recover possession of the road for the company.

At the request of a number of bondholders, the plan of reorganization has been modified by providing that the proposed suspension of sinking fund payments shall be for five years only.

The Receivers' statement for December, the first month of the fiscal year, is as follows:

Railroad Co.	1884	1883	Inc. or Dec.	P. c.
Earnings	\$2,315,563	\$2,297,643	\$17,920	0.8
Expenses	1,394,552	1,412,086	D. 17,534	1.2
Net earnings	\$921,011	\$885,557	I. \$35,454	4.0
Coal & Iron Co.				
Earnings	\$1,074,892	\$1,110,456	D. \$35,564	3.2
Expenses	1,124,376	1,216,598	D. 92,222	7.6
Deficit	\$49,554	\$106,110	D. \$56,556	53.3
Both companies				
Earnings	\$3,390,385	\$3,408,099	D. \$17,714	0.5
Expenses	2,518,928	2,628,682	D. 109,754	4.2
Net earnings	\$871,457	\$779,417	I. \$92,010	11.8

The earnings of the New Jersey Central are included in both years. The expenses as given above contain nothing for interest or rentals, the net earnings being the amount from which those charges are to be made.

The traffic and the coal mined for the month were:

	1884	1883	Inc. or Dec.	P. c.
Passengers	1,743,031	1,840,351	D. 97,320	5.3
Tons merchandise	561,560	659,673	D. 98,113	14.9
Tons coal	959,047	820,260	I. 138,787	16.9
Tons coal on colliers	40,140	46,631	D. 6,491	16.3
Tons coal mined:				
By Coal & Iron Co.	374,828	286,770	I. 88,058	30.7
By tenants	58,730	88,657	D. 29,927	33.6
Total	433,558	375,427	I. 58,131	15.5

This shows a considerable falling off in general business, but a large increase in coal traffic, the latter accounting for the gain in earnings over last year.

**Port Royal & Augusta.**—A dispatch from Augusta, Ga., Jan. 30, says: "A bill of complaint has been filed in the clerk's office of the Supreme Court praying for the appointment of a receiver to take charge of the Port Royal & Augusta Railway Co. The action is instigated by the holders of the second-mortgage bonds of the company, who allege that the Central Railroad & Banking Co., now owning a ma-

jority of the stock and operating the road, is compelling it to pay the interest and sinking fund on a third mortgage made to that company, and leaving unpaid all the interest on the second-mortgage bonds."

By the last statement there were only \$121,000 second-mortgage bonds outstanding. The first-mortgage bonds are \$250,000, and the general mortgage bonds, which are income bonds, amount to \$1,500,000.

**Richmond & Allegheny.**—Work is now in progress on a branch of this road, which is to extend from Breno Bluff, Va., to the slate quarries in Buckingham County, which, it is expected, will give the road considerable freight traffic. The branch will be 5 miles long. Mr. John Kelly, of Lynchburg, Va., is contractor, and he has already finished the bridge over the James River.

**St. Clairsville & Northern.**—This road has been placed in the hands of a receiver in consequence of a dispute among the stockholders. It is a narrow-gauge line only 3½ miles long, extending from St. Clairsville, O., to Barton.

**Securities on the New York Stock Exchange.**—The Governing Committee of the New York Stock Exchange has placed the following securities upon the lists at the Exchange:

**Burlington, Cedar Rapids & Northern.** \$1,349,000 additional first-mortgage and collateral trust 5 per cent. bonds, making the total amount listed \$4,636,000.

**Chicago, Rock Island & Pacific.** \$3,000,000 first-mortgage and collateral trust bonds, having 50 years to run.

**Texas & Pacific.** \$6,500,000 new general mortgage and terminal 6 per cent. bonds, having 20 years to run from Aug. 1, 1884.

**Texas & Pacific.**—It is said that arrangements are being made for the extension of the track of this road from Sierra Blanco, Tex., to El Paso, where it now uses the track of the Southern Pacific road. The distance is 92 miles, and a large part of the road-bed was graded several years ago.

**Toledo, Cincinnati & St. Louis.**—The Corbin Committee of Bondholders has petitioned the United States Circuit Court to set aside the order permitting the Quigley Committee to become purchasers of the terminal property in East St. Louis. It is claimed that the Quigley Committee secured this order by a misrepresentation of the facts in the case.

**Troy & Greenfield.**—The Governor of Massachusetts on Feb. 3 sent to the Legislature a special message relating to this road—the Hoosac Tunnel property. After reviewing the history and management of the road, he considers and dismisses the plans of state management and of an absolute sale of the tunnel to the highest bidder. He recommends, with the approval of the Council, that there be a consolidation of the various interests into one vigorous corporation, and he suggests the wisdom of immediate action.

**Union Pacific.**—The Court of Claims at Washington has rendered a decision in the long-pending cases of the Union Pacific Railroad Co. vs. the United States. Chief Justice Richardson delivered the opinion. The following is a synopsis of the points decided: 1. The amount allowed by the Treasury Department for carrying the mails—being the same rates allowed by law to all other railroad companies—is a fair and reasonable compensation. 2. The United States is bound to pay for the transportation of its passengers (troops, etc.) from Council Bluffs to Omaha, over the bridge and between Council Bluffs and Ogden, the same rates paid by private parties—those rates being fair and reasonable. And the United States is not entitled to the reduction accorded to passengers who purchase through tickets between New York and San Francisco and other distant places, unless its passengers purchase tickets in like manner. 3. The company is required to pay into the Treasury of the United States each year 5 per cent. of its net earnings under the act of 1862, and under the Thurman act since its passage, in addition thereto, so much of the \$850,000 in dispute as with said 5 per cent. and the whole compensation for government transportation will equal 25 per cent. of its net earnings. 4. In determining what the net earnings are, the expenses bona fide paid out of earnings, and not charged to construction or capital, are to be deducted from the gross earnings, although they are partly in the nature of permanent improvements. 5. In stating the account to Dec. 31, 1882, the Court finds approximately that the United States owes the company \$2,975,700, and the company owes the United States \$5,734,392. The United States is entitled to judgment on the balance of \$2,758,692. 6. The accounting officers of both parties are to make accurate computations in accordance with the principles and formula laid down in the finding of facts and opinions, and judgment is postponed until their calculations are made and handed to the Court for examination and final action.

**Wabash, St. Louis & Pacific.**—A St. Louis dispatch says that a bill in equity has been filed in the United States District Court there by the Iron Mountain Railway Co. against the Receivers of the Wabash road, to nullify the indorsement of the company on all Wabash bonds and notes, and to remove Jay Gould, Solon Humphreys, Russell Sage, and F. L. Ames from the directory of the Wabash, as they are also directors of the Missouri Pacific road, a competing line.

**West Jersey.**—This company makes the following statement for December and the year to Dec. 31:

	December—	Year—	1883.	1884.
Earnings	\$83,130	\$75,496	\$1,319,648	\$1,227,654
Expenses	80,283	80,120	816,343	785,757
Net earnings	\$2,847	\$13,654	\$503,305	\$441,897
Interest, rentals, etc.			290,375	281,398
Surplus for stock			\$203,930	\$160,599

\* Deficit.

The year shows a gain in gross earnings of \$91,994 or 7.5 per cent.; an increase in net earnings of \$61,408 or 13.9 per cent., and an increase in surplus of \$42,931, or 26.3 per cent. In 1884, two dividends were paid; one of 3 per cent., payable in scrip, and the other 3 per cent. in cash. The sinking fund was increased by the addition of \$12,500.

The leased West Jersey & Atlantic road earned for the year \$203,287 (included above), an increase of \$12,623 compared with the previous year. The total operating expenses were \$120,001, a decrease of \$3,110, and the net earnings \$83,286, an increase of \$15,730.

**Wisconsin Central.**—The Chicago, Milwaukee & St. Paul Co. has withdrawn its opposition to the running of this company's through St. Paul train band from Milwaukee, and has permitted the through sleeping cars to go out over its track. Negotiations are now in progress between the two companies, with fair prospects of a friendly settlement of the difficulty.

**Wrightsville & Tenille.**—The track of this road is now laid from the junction with the Central road at Tenille, Ga., southward 15 miles, leaving only 1½ miles to complete the road, which will shortly be laid. The trains are now running for local business, and the Georgia Commissioners have given the company a tariff of rates.